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DOMESTIC ENGINEERING

MAY
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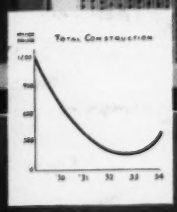

lumbing & Heating Contracting and Merchandising

UNIFLOW OFFERS A COMPLETE LINE* OF SHALLOW AND DEEP WELL

WATER SYSTEMS

PRICED TO MEET ALL COMPETITION

*250 TO 5,000 GALS. PER HOUR

$35.06 NET

TO JOBBERS
Write or wire for our special proposition.

To get and hold today's business, you must offer your customers the greatest dollar values. With the UNIFLOW line you can offer time tested quality yet meet "bargain" competition.

Favorably known, wherever used because of quality construction and economical service, UNIFLOW Water Systems give you exclusive features and the leverage needed to meet every kind of competition.

Prepare for the season just ahead by getting the new UNIFLOW net cost proposition, direct from us or from your jobber.

NRA
WE DO OUR PART

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UNIFLOW MANUFACTURING COMPANY ... ERIE, PENNA.
makers of fine precision equipment since 1921
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Is there Anything New in Frost-Proof Closets?

WE'LL SAY THERE IS!

THERE'S A NEW VOGEL LINE!

With the dependable Vogel valve, which plumbers have known for more than 25 years, as a foundation, we have designed these new, modern, efficient closets.

All have china bowls and low, drum-shaped tanks. Some have top supply. Each one is the last word in efficiency and economy in the use of water, and they all bear the name "Vogel" which all plumbers know stands for quality.

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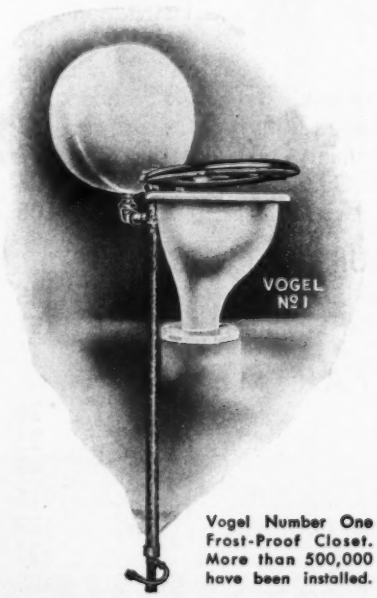
WILMINGTON, DELAWARE ST. LOUIS, MO.

Vogel Number Fourteen—non-frost-proof. Vitreous china bowl, heavy brass flush valve, reinforced hardwood seat and drum-shaped tank.

Let us supply you with folders and blotters on the Vogel Line, to send to your customers. They are imprinted with your name and address and will bring you business if you use them regularly.

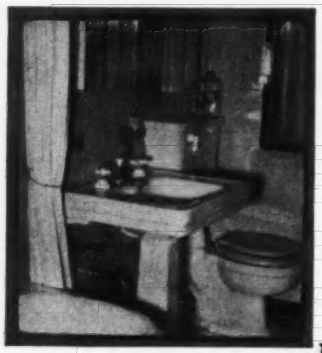
VOGEL PATENTED *Products*



Vogel Number One Frost-Proof Closet. More than 500,000 have been installed.

Vogel Number Five for inside installation. Has the same powerful flush and lasting quality as the frost-proof outfits. Furnished with drum-shaped pressure tank.

The Vogel Number Four Frost-Proof Closet—with a vitreous china bowl and top inlet. Can never freeze and looks as good as a bathroom closet.



DOMESTIC ENGINEERING

Plumbing & Heating Contracting & Merchandising

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WE DO OUR PART

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E. DE FOREST WINSLOW
Vice President

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Secretary

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Editor

R. Herlov, L. W. Britton,
Wm. W. Gothard,
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Consulting Editor on Plumbing

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"Trojan"—all-welded storage tank (range boiler) of rust-proof Everdur, made by W. A. Case & Son Mfg. Co., Buffalo, N. Y. Readily used with any type of independent water heater operated by gas, oil, coal or electricity, including ranges and furnaces.

Profit!...by selling EVERDUR Range Boilers

and the convenience of rust-free hot water

LET'S have a peek into the cellars, or a glance into the kitchens, of the houses in your community. How many have rusting range boilers? How many have otherwise unsatisfactory heater tanks? And how many have no hot water supply system at all? To some of these homes now... and to others, week after week ... you can sell storage tanks of *rustless* Everdur.

Everdur is copper...the accepted non-rust metal...scientifically alloyed to provide the strength and welding properties of steel! And Everdur *cannot* rust! Your customers and prospects will appreciate that fact particularly, for all of them want hot water that is rust-free...not only when the tank is new, but indefinitely.

Why don't you make a special drive for Everdur range boiler business this spring? Every installation that you sell increases your profits... and helps your reputation with the better and more desirable type of customers.

Everdur tanks are standard with leading makers of automatic water heaters and range boilers. Additional data about Everdur ... an exclusive Anaconda metal...will be mailed on request.

• • •

EVERDUR

A registered trade-mark identifying products of The American Brass Company made from alloys of copper, silicon and other elements.

ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY
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EVERDUR METAL *for* TANKS

MAIN LIBRARY

Careycel
ASBESTOS
INSULATION

For Piping, Boilers, Tanks, Ovens and Other Apparatus Carrying Temperatures up to 300° F

Careycel INSULATION

Definitely Superior

Careycel pipe coverings and blocks are the result of an entirely new process of "Cellizing" the asbestos. Designed to insulate piping and apparatus carrying hot water and low pressure steam temperatures, the new product is far superior to materials heretofore sold for this purpose.

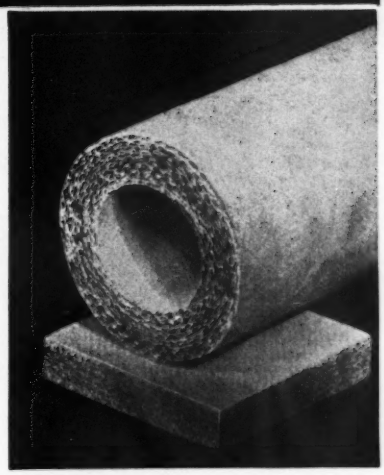


Illustration of Careycel pipe covering and block.

Cuts Heat Losses

Tests made by a leading research institution proved that heat losses through 1" Careycel are 30% less than through an equal thickness of corrugated Air Cell type insulation.

Upon request we will gladly furnish a copy of the laboratory report establishing this fact.

Since Careycel sells in the same price range as corrugated Air Cell type insulation, its use insures economies which cannot be disregarded.

Greater Resiliency

The resiliency of Careycel compares with that of high priced laminated pipe coverings and blocks, and it is far superior in this respect to other materials selling in its price range.

This resiliency means that Careycel is subject to less damage in shipment, when being applied, and when in service.

Minimum Shrinkage

Even the better grades of pre-shrunk Air Cell pipe coverings develop unsightly, heat wasteful shrinkage cracks between adjacent sections. Scientific tests show that shrinkage of Careycel is only 1/10 as much as that of corrugated Air Cell type pipe coverings, being actually only 0.05%.

Better Appearance

The exposed surfaces of Careycel are smooth, like those of high priced insulations; the corrugation ridges which tend to make Air Cell type pipe coverings unsightly, are entirely eliminated in Careycel. This factor of appearance is most important since much pipe covering of this type is applied on exposed heating system piping.

Upon request, we will mail a sample of Careycel and complete information about this superior heat insulation. Write today.

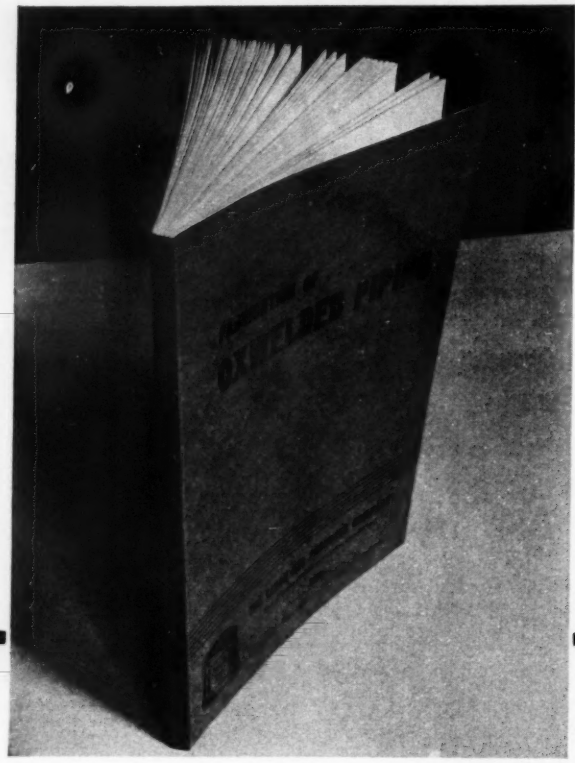
DEPARTMENT C

The Philip Carey Company

Incorporated

LOCKLAND, CINCINNATI, OHIO

CUTS HEAT LOSSES 30%



THIS NEW BOOK-

covers all phases of Oxwelded Piping

HERE is the only complete presentation of the fundamentals of pipe welding technique ever published. This new 160 page book, "Fabrication of Oxwelded Piping" answers every question on the installation, fabrication and erection of oxwelded piping systems. It contains complete data and procedures for using recently developed welding methods, new material on welding fittings and the welding of joints in steel, cast iron and non-ferrous piping.

Engineers, inspectors, superintendents, foremen, pipe fitters and welders will find this book a mine of general and specialized information. From the standpoint of management charged with making capital expenditures, it points the way to lowered welding costs through its presentation of detailed procedures on Lindewelding. The growing use of this new method in the field of industrial and building piping makes it imperative that up-to-date builders, contractors, architects and engineers study this technique, presented for the first time in the "Fabrication of Oxwelded Piping."

We will gladly send you "Fabrication of Oxwelded Piping" free of charge, if you can use it to advantage. It is offered only to those who write for it. Address your request to the nearest Linde District Office.

LIVE TOPICS DISCUSSED IN THIS BOOK

—fundamentals of pipe welding technique. The clear, concise presentation will enable an operator to learn pipe welding more readily and equip him to handle any unusual welding problem.

—procedures on Lindewelding, covering the application of this technique to all classes of piping.

—time and material data with tables for estimating costs provide essential information for use as a basis for computing costs.

—layout and fabrication of oxwelded piping, establishing reference lines, laying out cuts with or without the use of templets, header fabrication etc.

—special recommendations on joint design and the latest practices in oxwelding cast iron, copper, brass and lead pipe.

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Unit of Union Carbide and Carbon Corporation

126 Producing Plants UCC 627 Warehouse Stocks

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CHICAGO FAUCET NEWS

Issued Monthly by The Chicago Faucet Co., 2700-22 N. Crawford Ave., Chicago, Ill. Vol. 2, No. 7

TROUBLE AVERTED!

FAMILY RIFT HEALED

Plumber Solves Difficulty

All Now Serene

Special Bulletin—April 20, 1934: The spirited controversy between the two schools of bathing preference, those who favor the daily shower as opposed to those who hold to the tradition of the Saturday night tub—the energetic young-modern sputterers versus the staid elderly crooners—has settled into an alignment which sharply divides families. It is believed, however, that the plumbers have the situation well in hand and that it will not be necessary to land the marines.

The Mortimer J. Biscuit household presents a typical instance of the intra-family aspect of the controversy. The younger members, two sturdy sons and a peppy sub-deb daughter, are outspokenly in favor of shower bathing. They aver that "there isn't a really decent school or club or any other civilized place where people really have any self respect that doesn't provide a shower." They even go further than that and claim, somewhat vociferously, that "every decent home we know of, except ours, has a shower bath"; and they cite dozens of examples among "the best families in town."

Mrs. Biscuit is obviously neutral in the matter. She would very much like to see the children have a shower. In fact, she states, timidly, that she "had a shower once, that time at Atlantic City, and thought it was fine." But she admits that it would be out of the question to install one now, what with the depression and all, and money being so scarce, "but just the same, Mort, it would do no harm to look into it and see. Of course I don't care anything about it for myself, but I do think we ought to consider the children."

Biscuit, however, is adamant. "Bosh!" is his answer to every argument. He is a stubborn man, and, besides, he has a private notion that installing a shower bath would be tantamount to practically remodeling the entire house. So his latest rejoinder to the arguments presented by the kids was sharp and to the point; or rather, beside the point. He said, pompously, so that the entire family might hear and reflect, "When I was a young man, we didn't know what a shower bath was—or a bath tub either. When I wanted a bath in those days, I used to go down and jump in the lake."

This reminiscence was received in silence by all except Chester, the elder son, who remarked, too heatedly, perhaps, for proper filial deference, "Aw yeah? Well I suggest that you do that now!"

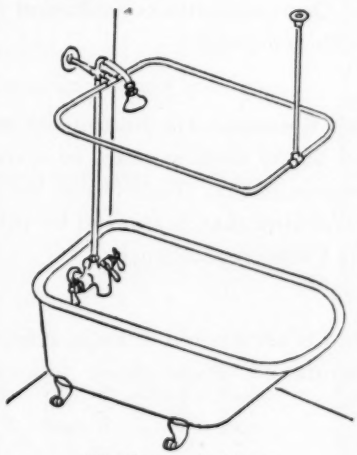
A tense moment ensued, but Mrs. Biscuit, a skilled mediator, prevented an altercation by launching conciliatory admonitions in both directions.

Biscuit, who felt a little cheap at having drawn such a rejoinder from one of his family, but with no intention to give in, decided to appear magnanimous and, at the same time, settle the matter once and for all—in his own favor. So he said, triumphantly, "Well, children, just to show you that I am willing to be fair and at the same time convince you how out of the question it is for us to consider installing a shower bath, tomorrow I'll have a plumber come over and figure on what such a thing would cost."

All parties to the controversy view this proposal with satisfaction.

OBVIOUS ECONOMY CLINCHES DEAL

Special Bulletin—April 22, 1934: Yesterday, following a promise made to his family, Mortimer J. Biscuit consulted plumber Frank Solder regarding the addition of shower bathing facilities to the bath room in his residence. He had been under the impression that such a step entailed a cost which would be entirely prohibitive, and he hinted that he personally was not wholly in sympathy with the idea, explaining that he was making the inquiry principally "to satisfy the kids."



Add-a-Shower Installation

"Personally, I don't care for shower bathing," he explained, "but my real objection is that I just can't afford to spend the two or three hundred dollars it will cost, and, besides, Solder, I'd hate like a dog to give up my tub bathing. On Saturday nights, I like to sit in a tub of nice hot water and sing and soak."

Mr. Biscuit expressed great surprise and interest upon learning that an Add-a-Shower could be installed in his bathroom, without disturbance to his present tub arrangement, at a cost which would be trivial when compared with what he had anticipated. So after a visit to the home and a definite quotation by Solder, based upon the specific installation, Mr. Biscuit readily agreed to have the Add-a-Shower put in.

Well, I'll be darned," he said.

When told of the decision, the entire Biscuit family was jubilant.

A QUICK PROFIT

April 28, 1934: At a meeting of the Master Plumbers' Association here last evening, Mr. Frank Solder, head of an aggressive plumbing and heating concern here in town, told of an interesting incident having to do with the installation of an Add-a-Shower in the residence of Mortimer J. Biscuit last week. "Those Add-a-Showers are one of the finest items I know of for a plumber to turn a quick and worthwhile profit on," he concluded, "and almost every home is a prospect."

BROWNIE SHOWER HEAD MAKES EVERY DROP OF WATER COUNT

Wherever economy of water is a requisite in connection with bathing, particularly when high cleansing efficiency is also demanded, a Brownie duo-circle shower head is certain to give complete satisfaction. It starts to cleanse the instant the water is turned on. Its narrow stream is easily directed by means of its ball joint, and all the water strikes the body. It consumes but little water because it makes all of the water effective. Many find that they prefer its stinging, invigorating action. Plumbers everywhere regard the Brownie as a profitable fitting which is a sure-fire satisfaction builder. It is furnished either nickel or chromium plated.

The Fast Selling Brownie

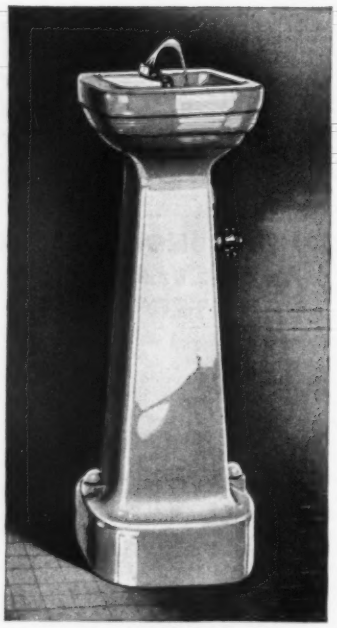
DON'T forget that Chicago Quaturn Faucets are the standard for operating efficiency and final economy. Plumbers everywhere build prestige with them.

THE

Farthest Advances

from the

old oaken bucket



C9042
Corwith vitreous china pedestal drinking fountain

Styled in the modern manner with square pedestal and basin. Fitted with the NEWERA three-stream bubbler and concealed TRIUMPH self-closing valve.

The last vestige of danger of infection-spread from drinking receptacles is ended by these new Crane fountains.

•

Lips touch only the running stream which automatically stays at a uniform height under varying water pressures.

•

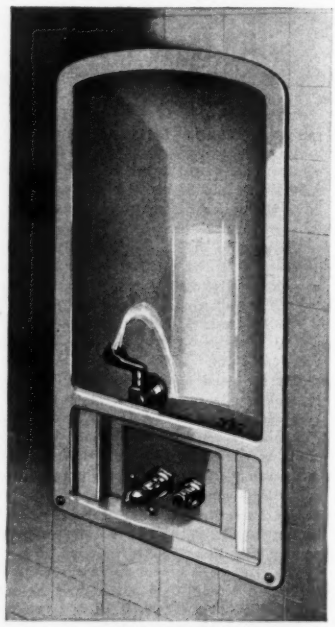
Saliva will not get into the jet openings because the stream is directed away from the jets. The raised bubbler makes back-siphonage impossible. Designed after consultation with health authorities.

•

Both fountains are beautifully modeled of the most sanitary of wares—vitreous china. Both have the dependability that is assured by the 79 year Crane reputation.

•

Schools are invited to request further information about these fountains.



C9268
Corridor vitreous china recess drinking fountain

The ideal fixture where space is limited, it fits flush with the wall. Fitted with the NEWERA three-stream bubbler and TRIUMPH self-closing valve.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILL. NEW YORK: 23 W. 44TH ST.
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VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

LET'S LOOK INSIDE

● Look through a section of STREAMLINE Copper Pipe and Fittings—here are no rough projections, inside shoulders, or abrupt pipe ends. The inside is almost as uniformly smooth as a gun barrel. The pipe is recessed into the fitting in such a way that the wall of the fitting is continuous. (See Illustration.)

The inside shoulder of the fitting, against which the pipe rests, is approximately the same height as the thickness of the pipe wall, thus forming a flow area in a STREAMLINE installation which is uniform and unrestricted through pipe and fitting. There are no anchorage points to encourage accumulation of foreign matter to lessen the flow and eventually clog the pipe.

A STREAMLINE installation cannot rust or clog. Vibration cannot make it leak.

Send for our catalog F and Solder Instruction Card. Yours for the asking.

TRADE MARK

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REG. U.S. PAT. OFFICE

FITTINGS AND COPPER PIPE

STREAMLINE PIPE AND FITTINGS CO.
PORT HURON, MICHIGAN
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GOOD PIPE COSTS NO MORE AND IT BUILDS GOOD WILL

Plumbing and heating contractors figuring on new construction and on replacement work cannot afford to ignore the fact that all makes of steel pipe are not of equal quality. Nor can they afford to overlook the good-will value of the prestige behind the name of the maker of the pipe—prestige built up through years of conscientious manufacturing practice and continued advertising of the product to users.

Republic Steel Pipe costs no more, and it does help you get business. Republic is recognized as one of the leading pipe manufacturers of America. Pipe bearing this name meets ready acceptance. The name on the pipe assures your customer that you are using good material. And from the practical standpoint you will find many advantages. It cuts and threads readily and is easy on dies. It is uniform in wall thickness and strong at the weld. And it is a long life pipe.

Your supply house has it in stock or can obtain it quickly. Take advantage of the good-will of Republic's name by writing it into your proposals.

REPUBLIC STEEL PIPE

REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

A Small Thing of Vast Importance

The fittings in any job of copper plumbing are probably the smallest single item of expense, and yet they are the most important part of the job, because so much depends upon them.

NIBCO fittings are substantial—and they *look* substantial. They are rigid because they are cast, and for the same reason they are accurate in dimensions, shape and angles. The strongest solder joint known to the industry results from NIBCO principles.

Whether your job calls for flared tube fittings, straight solder fittings, or the new drainage fittings in copper, you can make sure of lasting satisfaction for your customer and yourself by using NIBCO fittings. They are small items, but highly important.

Your jobber can supply you with full details about the comprehensive line of NIBCO fittings, valves, and faucets. Ask about them—they mean profit to you.

A Complete Service In Copper Fittings Means These 6 Things

1. Flared Tube Fittings
2. Cast Solder Fittings
3. Waste and Vent Fittings
4. All Reducing Fittings
5. Pipe Threads to Copper Connections
6. Globe, Gate and Drain Valves

NIBCO provides any or all of these

Northern Indiana Brass Co.

ELKHART, INDIANA

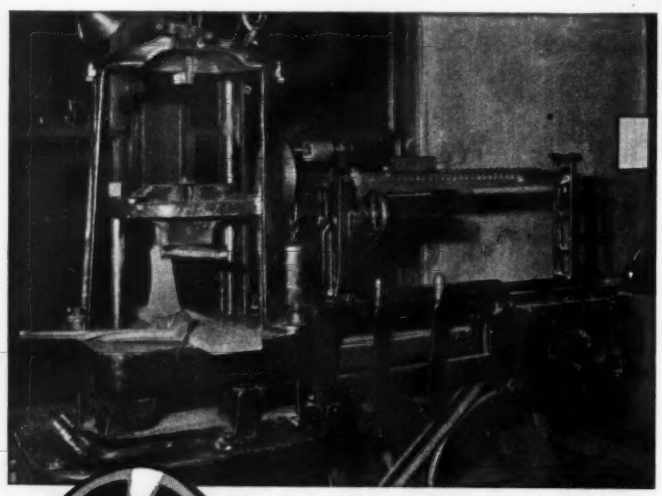
NIBCO

Gentlemen!

A NEW 7000 LB. RIDGID HANDLE

Astonishing Strength in New Wrench Handle of Super-X Alloy Metal

HOOK AND HEEL JAWS HAVE ALWAYS BEEN CHROME MOLYBDENUM NICKEL STEEL



Picture shows scientific test of RIDGID 24" stock wrench. Load of 6500 to 7000 lbs. applied 9¼" from jaw. Wrench entirely undamaged by test. Complete details of test on request.

THE RIDGID handle and housing are no longer made of malleable iron.

We have developed a new metal called Super-X that is neither malleable nor steel —but has the advantages of both.

This new metal more than doubles the strength of the old RIDGID Wrench.

The new RIDGID All-Alloy Pipe Wrench is still unique in strength and in use-satisfaction.

For instance, in 24" size, handles and housing of Super-X metal holds a load of more than 33 inch-tons 9½" from the jaws. No pipe on the handle can carry enough men to equal half of that.

Both hook and heel jaws have always been made of chrome molybdenum nickel steel —the finest alloy for the purpose. Both jaws are replaceable.

Add all the other RIDGID advantages to this tremendous strength and you have a pipe wrench unequaled anywhere at any price.

RIDGID still has the unbeatable guaranteed housing. You simply cannot warp it or break it. Adjusting nut spins freely in open socket, in every size, 6" to 60". You can't lock this wrench on a pipe. Instant grip, instant let-go. Accurate pipe scale on the hook-jaw and a handy hang-up hole in the handle, which is the most comfortable to the hand of any wrench we know.

For safety, long life, freedom from repairs and pleasure in using it, RIDGID is unequalled. Try it and see for yourself.

THE RIDGE TOOL COMPANY
Elyria, Ohio, U. S. A.

See the new RIDGID at your Jobber's.

RIDGID

PIPE WRENCHES » CUTTERS » VISES » THREADERS

A NEW POSTER THREADER

with a lot of RIDGID improvements you'll like

DIRECT DRIVE

★ Power goes direct from handle to head to chasers, in a straight line, pull being right over chasers. Greater strength and precision, no cocking or wabbling, absolutely accurate threads. No pressure on posts to bend or distort them.

FULL-FLOATING POSTS

★ Posts do one job—as they should: they taper the thread. Extra-heavy and not riveted, they protect whole tool in rough handling, reducing repairs. In case of damage, replace post only. Guide lines on posts for standard thread. Post carrying plate on work-holder also of floating construction.

ENCLOSED CHASER LOCKS

★ Chasers, held in place by enclosed ball-and-coil-spring, can't fall out. No exposed springs to break or damage.

NEW RATCHET CONTROL

★ Ratchet thumb lever snaps into exact reverse, forward or locked position. Arrow shows direction of pull. Simple, fool-proof.

A 2-IN-ONE THREADER

★ Set ratchet thumb lever at "Locked" and you have a solid die, making two tools in one.

NEW TYPE WORK-HOLDER

★ Set it to size with turn of knurled gauge ring—then put on pipe. Tighten with ONE screw. Easy, time saving, always right.

CHASERS INTERCHANGEABLE

Fit Any Make of Poster Threader

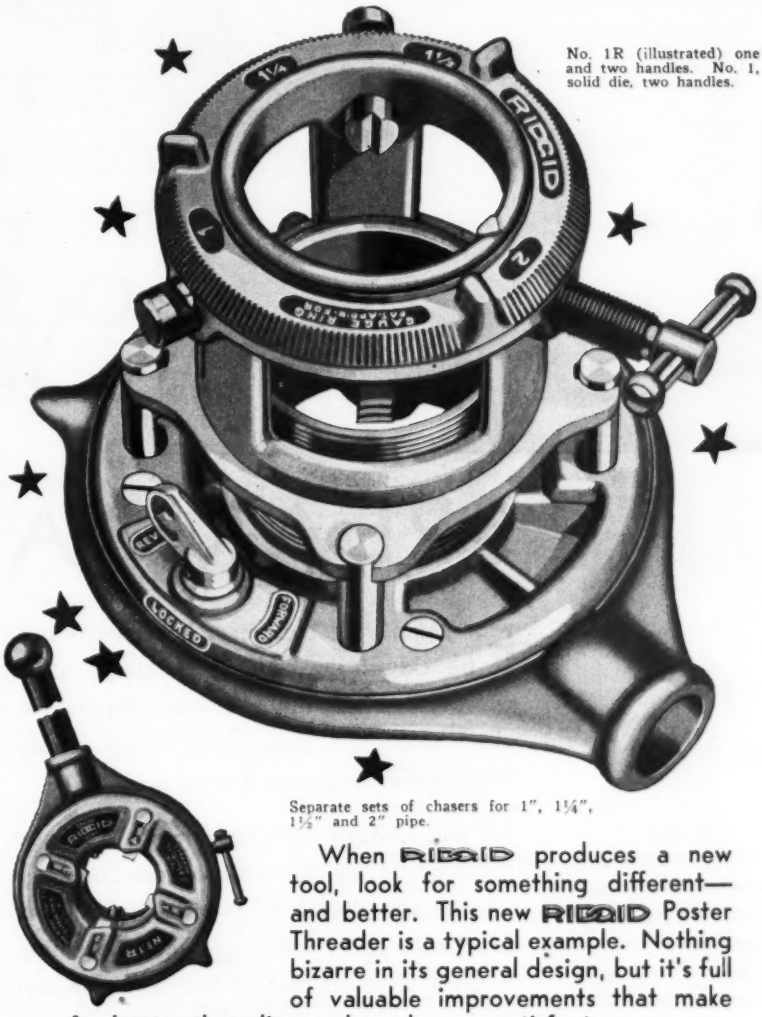
★ If one of 4 is lost, any other will fit. RIDGID *chasers fit any other make of post threader.* Made of special alloy steel—smooth accurate threads, long life. Four sets, one set for each size.

WEIGHS ONLY 12 POUNDS

★ Small size but powerful and rugged. Rust-proof throughout. Conventional design plus RIDGID improvements. No sharp edges. One-handle die has feet to stand it up.

* * *

RIDGID makes also No. 65R postless ratchet threaders that thread 4 sizes of pipe with one set of chasers, small ratchet dies and 3-way threaders—all with typical RIDGID advantages.



No. 1R (illustrated) one and two handles. No. 1, solid die, two handles.

Separate sets of chasers for 1", 1¼", 1½" and 2" pipe.

When RIDGID produces a new tool, look for something different—and better. This new RIDGID Poster Threader is a typical example. Nothing bizarre in its general design, but it's full of valuable improvements that make for better threading and much more satisfactory use.

Read the features described to the left and compare them with any threader on the market.

Ask your Jobber to show you this remarkable new RIDGID tool—examine it, try it. You'll find it in a class by itself. If your Jobber isn't able to supply you, write to us for information.

THE RIDGE TOOL CO.
ELYRIA, OHIO, U. S. A.

RIDGID

PIPE WRENCHES, CUTTERS, VISES, THREADERS

Are you still installing Buglers?

Or have you switched to the new . . .

SPEAKMAN SI-FLO SILENT-FLOW

K-1001 — SPEAKMAN Chromium Plated Si-Flo Closet Flush Valve with 1" capped angle stop for right or left inlet, wall flange, metal oscillating handle, flush connection, spud coupling nut and flange for 1½" top supply. ***(Pat. Pend.)***

Compact piston unit of SPEAKMAN Si-Flo Flush Valve — the complete working parts. Can be replaced at almost negligible cost, and in five minutes.

For years your customers have wanted to be rid of the hissing, gurgling noises which come from the bathroom whenever a closet is flushed. Such noises follow supply lines and spread over a wide area.

For years efforts have been made to silence these noises, but it was Speakman Company who finally did it. First, by developing a practically silent valve, and then designing a bowl so quiet that no flushing noise can be heard outside the bathroom.

In addition to the Si-Flo being an extremely *quiet* combination, it is also a most efficient one, the valve having but one moving part, which can be quickly replaced at a most nominal cost and the bowl imparting a swirling action to the water which assures absolutely sanitary surfaces.

Bowls are hygienic height — 14 inches. The Si-Flo can be supplied to meet all requirements and they rough in on standard measurements.

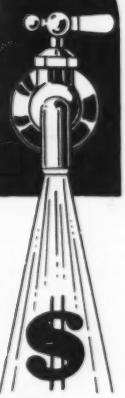
Bowls can be furnished in any standard color with seat matching—also with mother-of-pearl seat. Choice may be had of closed-front seat with and without cover—open-front seat with and without cover—and black hard rubber composition open-front seat. Bumper furnished with seats having cover; check-hinge furnished with seats without cover.

Literature is available on the Si-Flo. Send this to your customers. It is imprinted with your name and address, of course.

SPEAKMAN COMPANY
Wilmington, Delaware

SPEAKMAN *Showers & Fixtures*

200 to 10,000 GALLONS of WATER PER HOUR



MYERS WATER SYSTEMS

offer unlimited possibilities for PROFITABLE BUSINESS

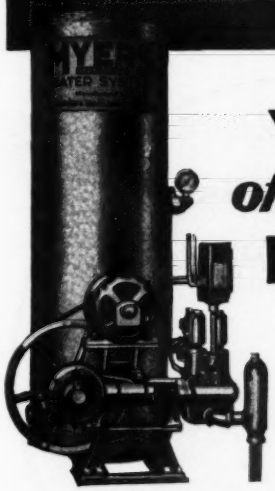


Fig. 2510

WHEN it comes to pumps and water systems for home, farm or factory, where is there another line equal to the Myers for sales possibilities?

Style and size range. Quality. Performance. Customer satisfaction. Profits. Step by step the Myers Line leads to the doors of prospective water users whether they be city folks, suburbanites, or dairymen, farmers and fruitmen.

Whether your business is located in the city, town or village—whether or not you have electric power and light in your locality—makes little or no difference—for Myers Self-Oiling Power Pumps and Water Systems are designed for wide service. Shallow or deep well, engine or motor power. Few indeed are the demands which cannot be successfully and profitably met from the Myers Line.

Write or wire for catalog and prices.

Fig. 2628

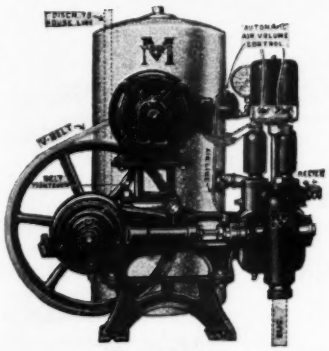


Fig. 2739

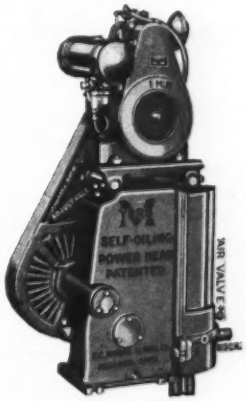


Fig. 2551

THE F.E.MYERS & BRO. CO.

ASHLAND, OHIO.

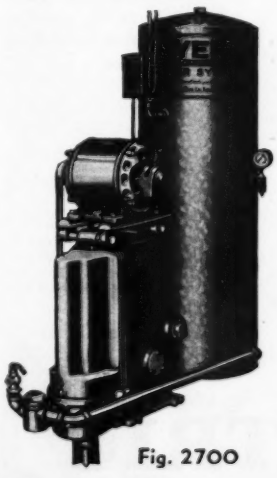


Fig. 2700

Fig. 2549

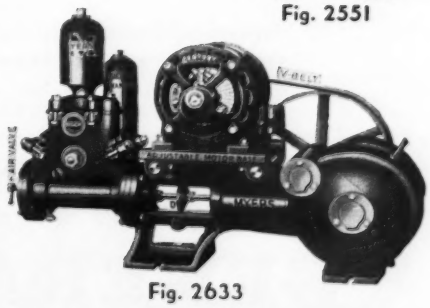


Fig. 2633

PUMPS—WATER SYSTEMS—HAY TOOLS—DOOR HANGERS

CUT SERVICE COSTS

with this G-E MOTOR for PUMPS

The improved G-E Type RSA single-phase motor for pumps is available in 1/6, 1/4, and 1/3 hp. These three ratings have absolutely interchangeable mounting dimensions for all frequencies and for direct current. The repulsion-induction type is easily reversed by shifting the brush yoke.

These General Electric Type RSA motors for small water pumps are dependable under adverse conditions.

They do not require frequent attention over a long, continuously satisfactory operating life.

Their large bearing-oil capacity makes it unnecessary to oil them more than once a year.

Drip-proof end flanges have built-in terminal boxes which do away with all necessity for splicing and soldering connections.

Their performance characteristics are in accordance with N.E.M.A. standards for Short Annual Service.

Write for a copy of our new bulletin, GEA-1769, which describes and illustrates the Type RSA motors. Address the nearest G-E office, or General Electric, Dept. 6A-201, Schenectady, N. Y.

NRA MEMBER U.S. WE DO OUR PART

070-39

GENERAL ELECTRIC

A *Source* OF SUPPLY THAT GIVES YOU *Everything*

★ ATTRACTIVELY PRICED

★ TIME TESTED QUALITY

★ EXCLUSIVE FEATURES

McDonald Home Water Supply System, Figure 417-80. Capacity, 375 gallons per hour. 30-gallon tank. Approximate shipping weight, 180 lbs.

McDonald Shallow Well Pump, Figure 403. Capacity, 250 gallons per hour. Equipped with standard motor of up-to-date design. McDonald Double Pole Switch control, adjustable for pressure and range; McDonald Relief Valve. Approximate shipping weight, 120 lbs.

In offering a complete line of water systems and power pumps, we realize that you have competition to meet—and we've priced our line accordingly.

But price is only ONE factor in selling and servicing pumps.

Equally important is the fact that you have a reputation to uphold . . . that your best source of *new* pump-customers is the satisfaction of *old* customers . . . and that trouble-calls, being expensive, must be kept down to a minimum.

The dependability of McDonald Water Systems and Power Pumps is the result of *78 years' experience.* No McDonald pump has ever been engineered to a price. Long life and dependable service have been the first considerations, and only when these were accomplished, has the price been established.

It was this principle of operation that made us the largest cylinder and one of the largest pump manufacturers in the world. And it is the same principle that now enables us to say: If you wish a line of pumps that you can offer honestly as the most dependable available anywhere; if you are interested in effective merchandising cooperation, and if you believe in dealing with large, time-tested and responsible sources of supply, by all means ask for details. Complete catalog on Water Systems and Power Pumps, with prices, will be sent on request.

A. Y. McDonald Mfg. Co.
Dubuque, Iowa
Omaha Minneapolis Des Moines Kansas City
Sioux City

McDONALD

— WATER SYSTEMS AND POWER PUMPS —

BETWEEN OURSELVES

Thanks:
We use Domestic Engineering every day with our customers to help sell jobs.
T. J. W., Ohio

Code Enthusiasm Drops

SOME of the enthusiasm for codes has tapered off in recent weeks. This results partly from the greater freedom in criticizing Washington happenings which has been evident lately. It comes partly from the delays in setting up the compliance rules and regulations by which codes are to be enforced.

Advantage of Delay

ENTHUSIASM for the codes is still about as great among those industries which have not secured their own. And with compliance provisions assuming more definite shape, it is at least reasonable to hope that industries, like ours, which are among the last to secure approval may be spared some of the disappointments which came to those who got their codes before the NRA was ready to handle complaints and enforce compliance.

Early Signing

THIS month should see our codes finally approved. Many of the manufacturing groups have theirs. With both the heating and piping contractors and the plumbing contractors holding their annual conventions late in May, the announcement of actual signature by the President of the United States is likely. Certainly, the officers in charge of code negotiations will make every effort to secure such approval.

Building Is Up

BUILDING records look better. Totals of contracts are going up with some remarkable gain being shown. These gains are helped to a very large extent by public works appropriations and the big percentage gains are based on small totals of a year ago. But in spite of all this, there are some definitely promising signs in the industry.

More Money to Spend

RESIDENTIAL work has picked up some. Rental agencies confirm the fact that more houses and apartments are filling up as doubled-up families give up crowded quarters and go back to living alone. These are the first signs which always precede an upward swing in building. Many recent sales of suburban properties are reported. The big reduction in the number of unemployed, and the higher wages for those who are employed is beginning to be felt in the home building market.

Better Business

GENERAL business conditions in our industry continue generally upward. Every one has felt the upswing from a year ago in one form or another. The rapid gains of last summer have been offset by recurring ups and downs but the present level is definitely higher. Dun & Bradstreet Inc. report a "steadily enlarged movement of pipes, fittings and valves, boilers, and radiators going to industrial plants, followed by the substantial supplies needed for repair, replacement, and maintenance work on residences and commercial buildings."

Push Heating Sales

THE memories of the unusually cold weather of the past winter in many sections is being revived successfully in encouraging the overhauling or replacement of heating plants. And air conditioning promises to provide a much larger volume.

Planned for Use

THESE are high spots of the month and you will find throughout this issue, evidence of the change for the better which is becoming steadily more apparent to all of us. And the articles offered you in this issue are intended for definite use by the contractor and dealer who is starting to contribute and to secure his share of returning business.

CWA Shows Market

YOU'LL find interest in the first report made on what the CWA survey found in a large city. The report is based on Chicago where 800,000 leaks were found—or an average of two per building. Here's evidence both of the run-down condition of practically all buildings, of a daily loss which home owners and landlords are suffering from faulty plumbing and an opportunity for repair and replacement work of tremendous size.

What You'll Find

OPPORTUNITIES in spring merchandising of seasonable articles, interesting developments in plumber-utility appliance merchandising, estimating, temperature control, water heating problems, the beginning of a new and practical series on air conditioning, how automatic heat units are being sold —all of these are in this issue along with a wealth of other articles, both long and short.

Your Editor

THE SCOVILL BOOTH AT THE CONVENTION

A GOOD PLACE TO TALK OVER

A REAL SALES-POLICY

WE WANT to talk with you at the 52nd Annual Convention of the A. M. P. You'll always find a hearty welcome at the Scovill Booth — No. 59. Drop in and tell us what you think of the new Scovill Merchandising-Policy, now going full-tilt. Many plumbers tell us that it has urged them to more good sales, given them additional confidence to know that we are in business to help *them* to profits.

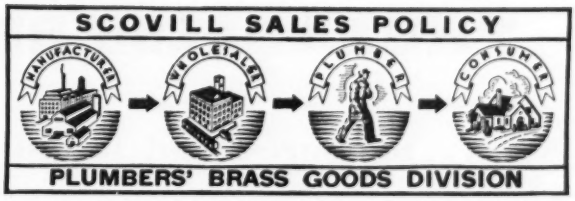
Our Policy has four points, for the mutual benefit of you, your wholesaler and ourselves. Our aims:

1 To sell our products at a price that guarantees you a fair profit. To produce the highest quality merchandise, with the help of constant research and our 132 years of experience.

2 To develop new products that will broaden your market, enable you to give your customers modern, efficient service.

3 To *help you sell* services and materials, through sales helps, advertising, attractive propositions.

4 To give the Scovill trade-mark and Scovill supplies an outstanding public acceptance and a buying preference—by supporting your sales efforts and by producing only high-quality merchandise.



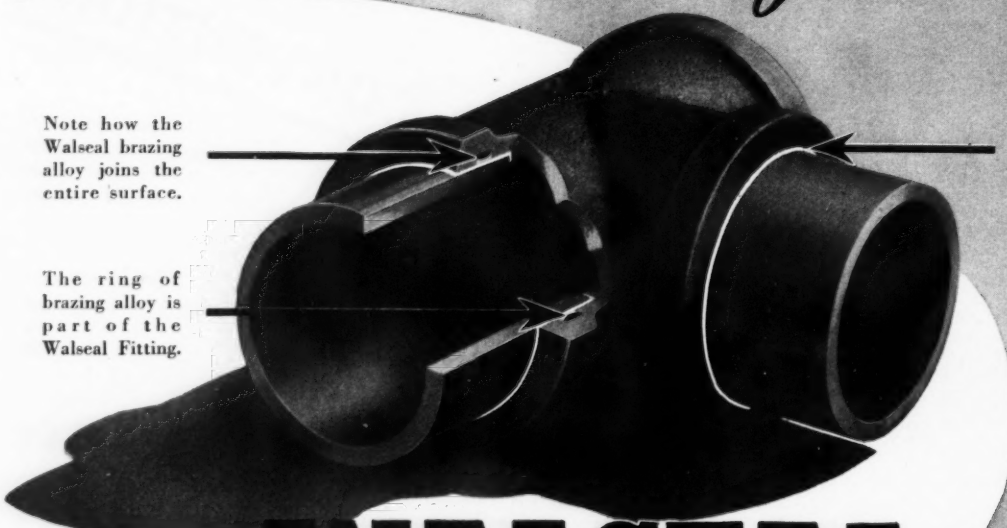
If you can't get to the Convention, drop us a line for more information on this new Policy, and tell us how it strikes you. If you go to Washington, the large display of Scovill products at Booth 59 will be well worth looking into. Tubular items, shower and bath fittings, flush valves and brass pipe will be included.

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE CONNECTICUT

Scovill Flush Valves, Shower, Bath, and Lavatory Fittings, Miscellaneous Plumbers' Brass Goods

SCOVILL

Announcing....


Note how the Walseal brazing alloy joins the entire surface.
Your visual proof of a tight joint—the white Walseal ring.
The ring of brazing alloy is part of the Walseal Fitting.

WALSEAL

(Patent applied for)

THREADLESS BRONZE FITTINGS

....the surest and fastest way of making a tight joint

Every quality desired for joining a non-ferrous pipe and fitting is incorporated in Walseal Fittings. The brazing alloy, "Sil-Fos", is incorporated as a ring in each opening of a Walseal Fitting. You merely slip the pipe into the fitting—apply oxyacetylene flame and when the white Walseal ring appears, a perfect joint has been made.

It is impossible to overheat the brazing alloy. The wrong brazing alloy cannot be used as Walworth builds the alloy into every Walseal Fitting and provides the proper quantity so that there is no excess to plug the line.

The finished Walseal joint—bronze or copper—is stronger than the pipe itself. It's vibration proof, corrosion-resistant, and will not creep—cannot pull apart under any temperature to which bronze or copper pipe can safely be subjected.

Last, but not least, Walseal Fittings are the only threadless bronze fittings made for iron pipe size brass pipe or extra heavy brass pipe (Walseal Bronze Fittings are available in extra heavy patterns). However, if economy is of primary importance, thin wall copper tubing I.P.S.O.D. can be used.

WALWORTH

VALVES FITTINGS and TOOLS
Backed by 91 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

OUR INDUSTRY

May, 1934

Dealers Regain Appliance Sales

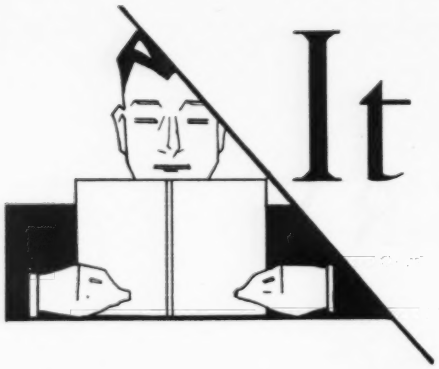
Have you ever taken the time to study the rapid swing in the merchandising of appliances which is culminating now in favor of the plumbing and heating dealer? It's worth studying.

Some years ago, these appliances were sold almost entirely through the plumbing and heating dealer for two reasons—the appliances required installation and service which he could give and, second, he was doing a good, pioneering sales job.

Then the utilities entered the picture, usually taking on the appliance which the dealers had already popularized. Over a period of years, the utilities gained a strong buying position because appliance manufacturers fought for the utility order first and went after the dealer only after losing the utility order to a competitor. With utilities buying at a steadily lower level, buying at wholesale and selling at retail, absorbing merchandising losses without any regard to sound business methods because the fuel bills would make up the losses—all of this united to give the utilities a stronger selling position.

At the same time, these tactics took most of the profit out of appliance manufacturing as such manufacturers in many cases were at the mercy of the utility buyer. And such tactics built up dealer and public ill will. The utilities had to meet this serious problem of regaining public favor.

Now actual co-operation with dealers is growing. In more and more cities, the utility and the dealer are working together. Sales have increased (see page 40). With better business in sight, with a period of heavier appliance sales ahead, the dealer is now re-assuming his importance as the appliance distributor. So far, the third factor —the manufacturer—has in most cases not become aware of a significant change which will definitely affect the future of his business.



It happened

SHARP PICK-UP IN CONTRACTS BRINGS LIFE TO BUILDING INDUSTRY

Construction contracts in March were almost twice as large as in February. They were about three times as large as in March of last year. The March total, according to the F. W. Dodge Corporation, was $179,161 500 with increases being registered in each of the four principal classes of construction—residential, non-residential, public works and utilities.

In the first three months, contracts aggregated $462,341,500 against only $196,026,800 in the first quarter of 1933. Residential building in those three months registered a pick-up of 46 per cent. Non-residential building went up 85 per cent. Public works accounted for a 350 per cent increase and utilities 250 per cent.

In interpreting these increases, the reports show their widespread nature, as first quarter gains are shown in each of the thirteen districts used by the Dodge corporation in compiling its figures.

For the coming second quarter, these reports forecast a continued improvement. Actual contracts in the second three-month period of 1933 were $236,086 600 with prospects for better than a $375,000,000 total for the same period of this year. Public works continue to account for much of the business, amounting to 75 per cent of the first quarter's business and probably 70 per cent of the prospective total for the second quarter.

A definite improvement is reported from many sections in renting conditions, indicating the moving by families from crowded quarters.

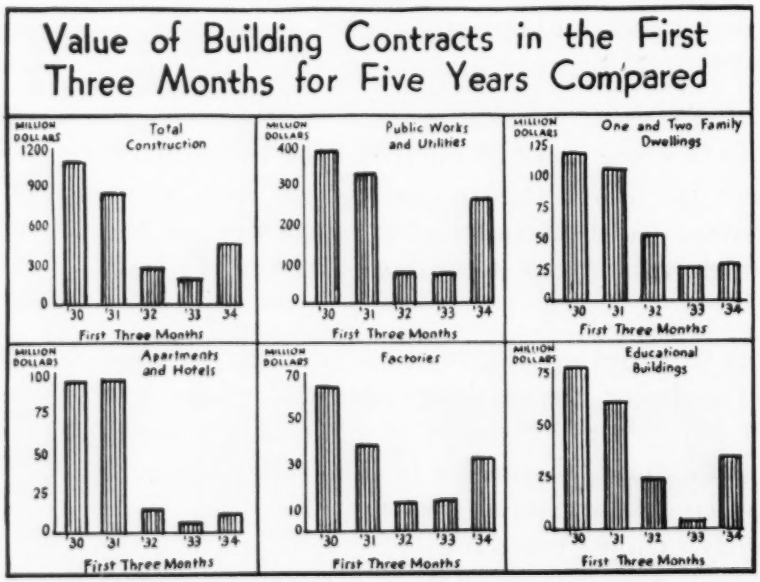


Chart by courtesy of the Chicago Tribune.

Plumbers Study Cost For Code Authority

A study of the cost of doing business in the plumbing contractors division of the construction industry is being made by Ernst & Ernst. They were engaged by the National Association of Master Plumbers.

Questionnaires are being sent to plumbing contractors as a means of securing information needed in compiling this cost record. The information is needed in connection with the NRA code program as recommendations for discounts are to be based upon definite and up to date cost figures.

Chicago CWA Surveys Show 800,000 Leaks

The first large city to report on the CWA home survey is Chicago, which showed more than three-quarter million leaks in the plumbing systems, an average of two per building. (Full report on Page 28.)

HOLC Loans Release Home Finance Brake

Government relief in the home financing field is reported by the Federal Home Loan Bank Board. Walter H. Newton, member of that board, recently said that more than $1,000,000,000 has been distributed in emergency loans made through the Home Owners Loan Corporation and that such loans are now averaging more than $40,000,000 each week. So far many millions have been distributed to closed banks and to home financing institutions, in many cases releasing funds for loaning on new home building enterprises. He estimated that the HOLC has saved 200,000 homes from foreclosure and kept 500,000 other homes off the market.

this month!

CODES OFFER INDUSTRY WAY TO LARGER PROFITS

"CODES AND HOW THEY RELATE TO INDUSTRY AND BUSINESS"—an address by L. U. Noland, President Noland Company, Inc., Newport News, Va., before the convention of the Master Plumbers, Piping and Heating Contractors Association of Georgia, Monday, April 30, 1934, 3 P. M.

We have been hearing a great deal these days about the "new deal" and good business, and how codes have helped to bring about better conditions. Certainly everyone must realize that changes are taking place—that new problems are presenting themselves every day and that even some of the old problems are bobbing up in new dress.

But the amazing thing to me as I travel around the country talking with distributors and contractors, is that there are so many who are thoroughly conscious of the new conditions, but somehow have the idea that everyone is going to be affected but themselves. There are still far too many who have the mistaken belief that they can escape the change—that this trouble we have been encountering, will eventually blow over and that they can resume where they left off in 1929 or 1930 and do the same things in the same way as before. What an awakening they must face and what a danger that such awakening might come too late!

Much has been said and written about codes. Everyone has heard something about codes. The word "codes" has become as common as the expression "new deal." While the meaning of codes is far reaching and perhaps quite confusing, yet aside from a standardization of working hours and wages, the important object of all codes and of the whole code idea is the elimination of the many unfair trade practices and cut-throat competition which have made it so difficult in the past to operate at a profit.

With these unfair trade practices

L. U. Noland

eliminated, or at least considerably curbed, the distributor and contractor will find himself in the position of having just three things to sell—QUALITY — PRESTIGE AND SERVICE. It is safe to assume, therefore, that competition will not be eliminated but rather, it will be even keener that ever before. Real competition comes when all sellers are offering essentially the same product or service at the same price. As a result—creative selling and service will be the basis of competition under the new way of doing business.

(Continued on Page 118)

Contractors Hold Big Conventions in May

The two big national associations of the contracting branch of the industry—the Heating, Piping and Air Conditioning Contractors National Association and the National Association of Master Plumbers—meet this month. The heating men convene at Atlantic City, N. J., on May 22-25 and the plumbers at Washington, D. C., on May 28-31.

TRACE AMEBIC EPIDEMIC TO FAULTS IN PLUMBING

At the New York Master Plumbers Convention, Professor Walter L. Cleverdon presented data gathered from studies of the outbreak of amebic dysentery in Chicago during the summer and fall of 1933 and indicated its possible effects on the plumbing industry. His data showed the following:

This epidemic resulted in 14 deaths, 721 clinical cases and the discovery of 1049 carriers of the disease. There were undoubtedly other cases not reported.

He stated that acknowledgment is made of the kind assistance given him by Dr. William H. Park, Professor of Preventive Medicine at New York University, and Director of Research Laboratories for the Department of Health of New York City; also to Mr. William W. Brush, Chief Engineer of the Department of Water Supply, Gas and Electricity of New York City. Valuable data have also been taken from the Journal of the American Medical Association of the February 3, 1934, issue.

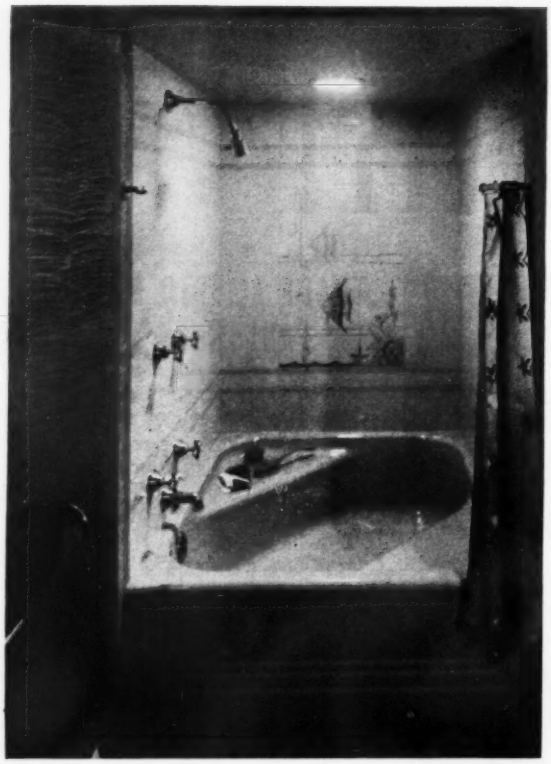
The following excerpts, which apply particularly to the plumbing business, are taken directly from this journal:

"Report of a Special Committee"

"The Committee, after careful investigation of the clinical histories and laboratory evidence of the epidemic of dysentery which originated in Chicago during the summer and fall of 1933, is convinced that the epidemic was one of amebic dysentery, and not of bacillary dysentery.

"In considering this outbreak, the unprecedented nature of the occurrence must be borne in mind. Until this time, amebic dysentery had not been known to occur as an epidemic disease in a civil population.

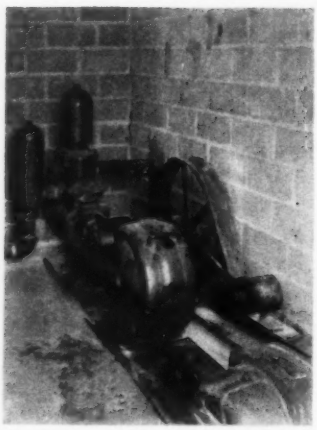
(Continued on Page 47)

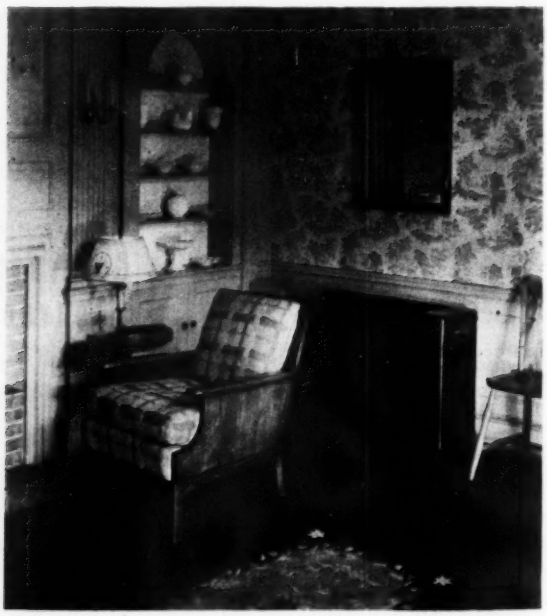


Spring Brings a Live Market

Above is a new type of bath tub which has just been placed on the market and which fits into the spring market, both from the standpoint of remodeling and new construction. Water supply systems as illustrated below are seasonable, as is air conditioning pictured at the lower right

AN analysis of charts published by the Department of Commerce which shows the volume of business in plumbing and heating indicates that at this time of the year, the peak demand centers about enameled iron plumbing fixtures, range boilers or water heating equipment, vitreous china plumbing fixtures, plumbers woodwork, water supply systems, water softeners, and air conditioning equipment.





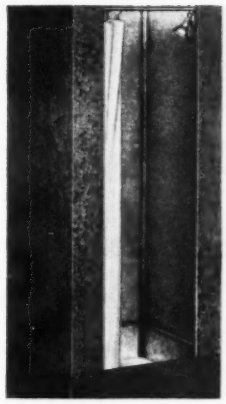
Within that range of products, the dealer in our field finds an abundance of openings for building business. And this year in particular, spring offers the dealer possibilities which the past few years have denied.

Today the dealer finds business greatly improved, he finds unemployment cut down, wages higher, retail trade good, building contracts on the upswing, empty homes and apartments filling up as returning wages and salaries permit doubled-up families to return to the individual homes they desire. Even one who still carries today some of the uncertainty which has controlled business for several years, can "look at the record" and find inspiration to go after business.

The pictures on these pages illustrate some of the items which are timely for spring selling. The dealer has many more to present to his prospects. Every repair job will uncover some evidence of the lack of care and maintenance which now requires that the plumbing and heating equipment be put in order or replaced.

The following comments on one branch of today's market has just come to us from a student of plumbing sales. It brings out reasons for pushing the sales of shower equipment, a peculiarly timely product for present day selling. "While shower bathing is a year-round practice with families having shower facilities," he writes, "it is noteworthy that the market for shower equipment among families not having the necessary arrangements is more active and responsive during the spring and summer than at other seasons.

"This hot-weather susceptibility of householders to shower bathing equipment sales effort has become more apparent during the past three or four years, due to the stagnation of the building industry and the resultant shift of effort to modernization. The decline in new construction has tended to isolate and emphasize the rehabilitation phase of the plumbing market, and more pointedly to reveal its real importance. Indeed, modernization has come more and more to the fore.

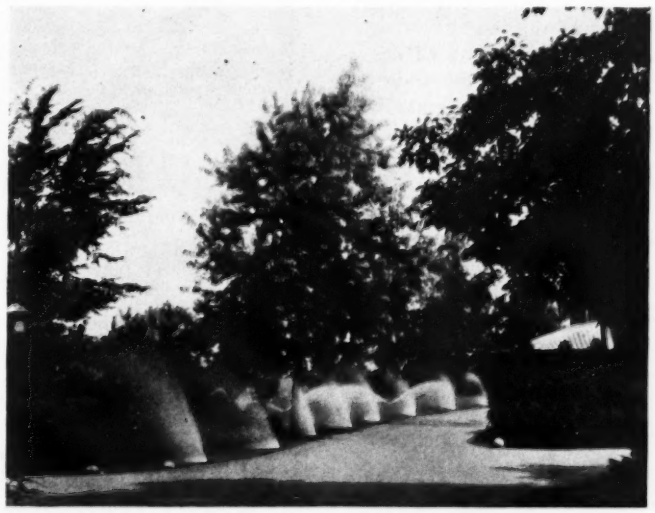


Spring is the time to get ready for hot weather shower bathing demands

"As far as shower bathing facilities are concerned, the market is seasonal, the most responsive time being during the spring and summer months. The gracious and soothing effect of shower bathing in hot weather is the reason.

"Not long ago, the installation of shower equipment, particularly in instances where it was to be added to established bath facilities, meant the expenditure of a tidy sum. Now, however, the plumber has at his command a ready means of making vast inroads into the former price-restricted and otherwise reluctant market; and there is today no reason why any family with a bath room and desiring shower equipment need forgo it a moment longer for any of the former reasons."

With business better and with better products to sell, the plumbing and heating dealer will find it worth while this spring to go after business.



With home owners and club managers thinking in terms of this year's crop of grass, it is timely to suggest underground sprinkling systems

Chicago Reports 800,000 Leaks

Survey Shows Need to Replace Wasteful and Unsafe Plumbing—

DURING the depression, members of our industry expressed concern over the deplorable state into which the plumbing of many buildings was allowed to deteriorate through neglect, wear or unskilled maintenance. And now as things show improvement with building revenues on the rise, many have speculated with much optimism on the vast amount of labor, materials and profits awaiting the plumbing industry while the plumbing in all these buildings was being brought back to the proper standard. But it is doubtful if anyone has fully realized the full extent of this job.

In a nearly completed report of the bureau of engineering, water pipe extension division, of the Chicago department of public works, made for the federal Civil Works Administration, many striking figures on the condition of the plumbing in the buildings of the City of Chicago are shown. It is being prepared under the supervision of Commissioner Oscar E. Hewitt of the Department of Public Works. Though the report lacks data from a few sections, it is sufficiently thorough to be of great interest to our industry, especially in the fact that advance reports from other cities indicate that the Chicago report may well be considered typical of the larger cities in the United States.

Foremost in significance to plumbing contractors, wholesalers and manufacturers is the fact that for every building in Chicago (certain industrial and commercial buildings of a special nature excepted) the CWA found at least an average of TWO plumbing fixtures to be leaking. These were found in closet bowls, flush tanks, tubs, valves and faucets and in all the other plumbing fixtures.

Bureau of Engineering, City of Chicago, Photos

Fig. 1—Typical first aid to leaking pipes. Almost every material was found used as bandages for leaking pipes with tire tape well in the lead

Fig. 2—A handyman's conception of a combination catch basin and grease trap. The building in which this was found is two stories in height with a family living on the second floor and a restaurant occupying the ground floor

A large force of men under the supervision of experienced plumbers, inspected 395,917 buildings. This force was divided into two groups. Section 1A sought out and repaired underground and outside leaks. Section 2B confined their inspection and repairs to the inside of buildings. Their investigations took them into nearly every building in the city and in all, they inspected more than 3,000,000 plumbing fixtures, to find nearly 800,000 of them leaking.

These figures seem only a little less striking when it is learned that they found about 438,000 leaking faucets which are common water wasters when in disrepair. But further in the report, it is shown that they found 61 per cent of all the closets in Chicago were leaking in one way or another. About 27 per cent of the bath tubs were found in the same condition as were some 10,000 riser pipes and more than 28,000 miscellaneous other items of plumbing fixtures.

THREE-QUARTER MILLION LEAKS

Then turning to the partially completed report of Section 1A whose men were working outside and underground, we find a total of some 25,771 leaks, 1,775 of which were due to worn or corroded roundways. And again inside, the hopper closet was a serious water waster, with more than 17,000 of them found leaking

and wasting water through various causes.

The skeptic who might insist the figures indicate only a state of neglect and disrepair should talk with some of the investigators and hear first-hand the urgent need for new or properly repaired fixtures and piping systems.

It is not, of course, news to say that during the past five years plumbing maintenance in many buildings has been in the hands of unskilled individuals sometimes called handymen. In some cases of apartment buildings in receivership or some such other temporary possession, the janitor patched up the plumbing system as best he knew how. But along with these were many more others in which the landlord or home owner in a sense of false economy appointed his furnace man or gardener to be his plumber, an arrangement which proved neither economical nor to the best interests of sanitation and health in the long run.

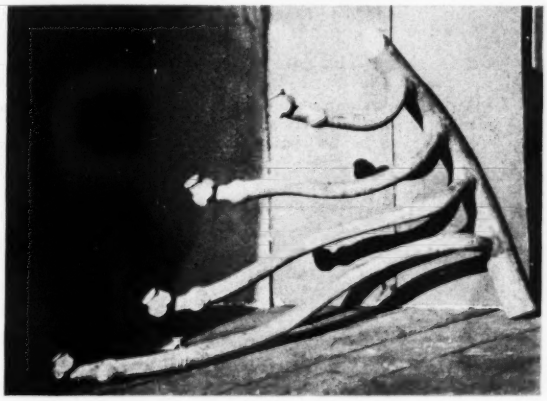


Fig. 3—Here is a typical example of amateur lead work. A 1½ in. lead supply pipe has been tapped with four ¾ in. outlets

The writer knows an owner of a nine apartment building which is about five years old and has always been well tenanted since its erection. About a year ago, the owner told his janitor to do the small repair jobs and informed his regular plumber that he no longer wanted the periodical check-up as in the past.

EXPENSIVE REPAIRS

Last month the water bill jumped to almost double any previous period and after his janitor assured him that he couldn't tell why so much water was being wasted, the owner called back his old friend, the plumbing contractor. The plumber found that the janitor had been grinding down the seats on all the faucets whenever he put in new washers whether they needed grinding down or not. The result was that there was very little brass left for the washers to seat on and most of the faucets in all nine apartments were leaking with the sink faucets alone pouring many gallons a day down the drain. So that landlord's misguided economy cost him the price of nine sink faucets as well as several on the lavatories and tubs which were ground into uselessness simply because the janitor, although an energetic janitor, did not know what a good plumber must necessarily know.

This case is mildly typical of the CWA findings as many instances of the handy-man's bunglings were very much worse. In many cases where he had installed fixtures, the handy-man had used second hand fixtures or materials. Cracked or leaking closet bowls and flush tanks were not at all rare; second hand pipe in all stages of corrosion and disintegration was too common to be at all impressive. Lead work, it goes almost without saying, simply can not be repaired or installed by the inexperienced and almost invariably when found was poorly repaired or installed.

How much of this work the handy-man has taken from the licensed plumber, there is no way of estimating. However, it is important to realize that the CWA investigation has shown beyond doubt that amateur repairs don't repair, and are certainly not economical. In fact they are shown to be the opposite as makeshift repairs are draining money every day from misguided landlords and home owners in wasted water.

HOME-MADE REPAIRS

The various illustrations throughout this article show how impermanent are home-made repairs. CWA investigators found everything from inner-tubes bound on to pipes with wire, to tire tape wrapped around broken and leaking valves.

In these findings lie an important point for plumbing contractors to remember. Since the CWA indicates that practically every building in the larger cities is in need of some repairs, an active plumber will keep on the lookout for several additional repairs though he might be called to the building for some entirely different reason.

Along with the handy-man's makeshift repairs were found many instances of the ordinary toll time takes on poorly maintained or entirely neglected plumbing. Many buildings with little or no revenue from tenants during the last five years were allowed to run down. The state of these buildings is, in most cases, undoubtedly recognized by their present possessors and they are being improved and brought back to standard as fast as increasing tenancy and likewise increasing revenues permit.

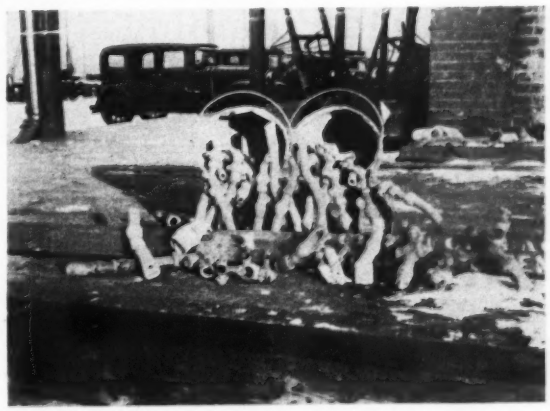


Fig. 4—This illustration shows a few of the 1,775 roundways which were found leaking from various causes

The question of the sanitary situation, that is waste considered separately from the supply, is rather a special one and one which was not included in the purpose of the CWA investigation except where it might have had direct connection with the wasting of water. While the investigators found many cases of insanitary and unhealthful conditions, no figures as to the extent of these conditions is available.

However, referring again to the CWA findings, if it will be recalled that 61 per cent of all closets were found leaking as were about 27 per cent of the bath tubs, some 28,000 miscellaneous fixtures and about 438,000 faucets, it is easy to imagine that in many cases this leakage must cause insanitary and unhealthful conditions.

Investigators tell of many cases of amateur repair or installation work on the drainage systems of the average type of buildings (omitting slum type dwellings which are always in a state of more or less disrepair). Some of them would be amusing to the plumbing industry had they not been so menacing to the health of the occupants of the buildings.

One investigator told of a cracked section of soil pipe in the stack of a building being replaced by two foot lengths of ordinary vitrified clay drain pipe—and this in the basement with the full weight of the entire venting system resting upon it.

UNSKILLED REPAIR WORK

Another instance was told of using a piece of 2-inch electrical conduit bent to form an elbow for a sink waste. Another instance was that of using a stove pipe and elbow to make a closet bend. Wet concrete was poured around it and the closet bowl was set on top, with no caulking or collar, but simply screwed into the wooden floor. At best his closet bend will be little better than a sieve.

These instances of bungling could be related indefinitely. But how many cases of corroded waste pipe, broken or damaged traps and faulty or leaking lead work—all leaking sewage—exist, it is not possible to say, except to repeat again that many, many buildings have had unskilled, if any maintenance, for the last five years.

Along with that thought, many in the industry probably are wondering how much the CWA men did to remedy this situation and how much work is left for the plumber to do—how much material the plumber will need from his jobber and how many fixtures the jobbers will need from the manufacturers.

CWA Report on Chicago Plumbing

Total number of buildings investigated..... 395,917
Total number of fixtures inspected.....3,007,232
(Or about 7 fixtures to a building)

LEAKS FOUND *INSIDE AND ABOVE GROUND*

Faucets .....438,082 or about 1.11 to each building
Closets .....244,254 or about 61 per cent
Bathtubs .....109,790 or about 27 per cent
Riser Pipes... 10,802
Miscellaneous.. 28,339

TOTAL LEAKS

782,565 (1.97 to each building) or 26 per cent of all fixtures are leaking or more than one in every *four*.

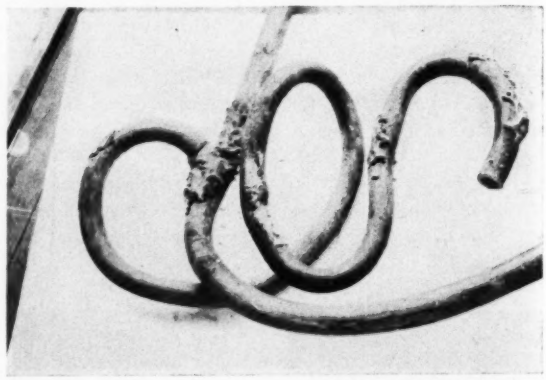


Fig. 5—Here is an example of a crude attempt to repair the leaks in a water pipe. Poorly soldered lead work was found to be an ordinary offense

That the CWA forces were able to complete so comprehensive a survey in so comparatively a short time seems remarkable. It is estimated that they repaired about 16,000 leaks both above and underground, which is about 2 per cent or two in every hundred of the leaks which the CWA investigators discovered within the areas already completely reported on. It is important for the plumbing industry, according to the investigators to note that these repairs were largely outside and underground or when made inside were confined primarily to the smaller fixtures such as faucets, valves, ball cocks and the like.

ONLY TWO PER CENT REPAIRED

About 98 per cent or some 766,000 leaking fixtures remain to be repaired or replaced and it can well be repeated that these may easily include closet combinations, tubs, lavatories, sinks, etc., with all their accessories of supply and drainage.

Thus it seems unquestionable that there are many months of work ahead in puting a great city's plumbing back into repair after five years of neglect, wear and poor maintenance. The CWA certainly had no cause to exaggerate. If every building in a city the size of Chicago has at least two leaking plumbing fixtures—and as we have been repeating, Chicago's case may be considered typical—then there is a great amount of work ahead for the plumbing industry.

This emphasizes that when a plumbing contractor is called to clear a sink drain or repair a water heater or for any cause at all, he should inspect the entire building—or ask now for the opportunity of a complete check-up on some of his old customer's buildings. Let him find those two leaks the CWA investigator's men have found in every building, and in finding them he will undoubtedly uncover items in the plumbing that need urgent, perhaps more urgent attention, than the items for which he was called to the building.

How High, How Wide, and How Deep Should We Make the Chimney?

Some estimates are that ninety per cent of all heating troubles are a direct result of faulty chimneys. Certainly, the chimney is of utmost importance both in servicing and remodeling old plants and in making new heating installations

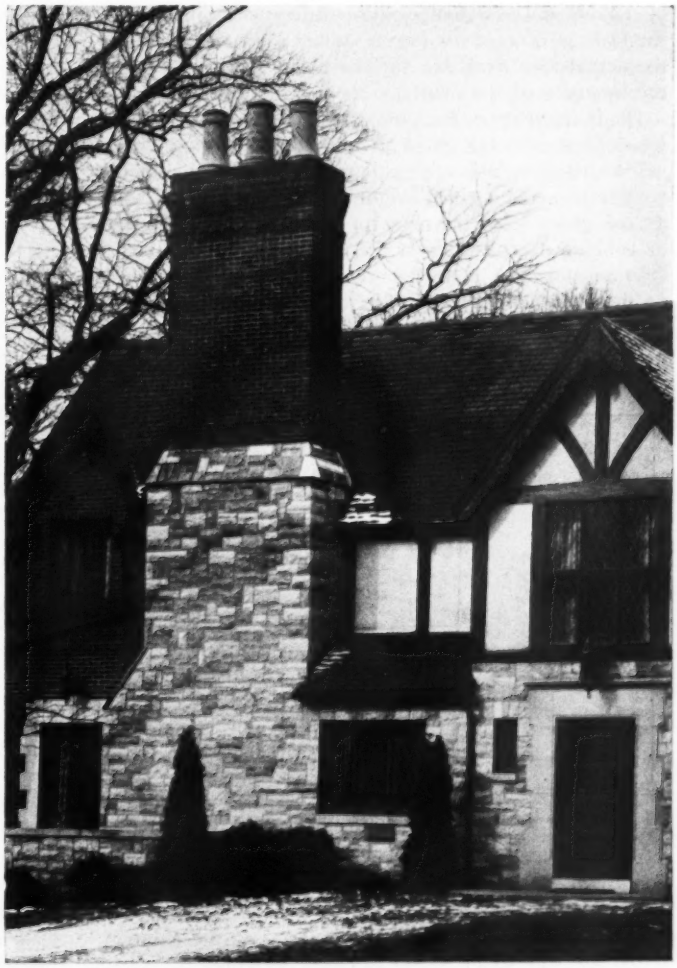


Fig. 1—"Care must be taken to distinguish between the intensity of the draft and the volume of the draft. The intensity is the reading of the draft gauge while the volume is the quantity of gas which is being handled"

CHIMNEYS is a subject in which every one in the heating industry is intensely interested; every piece of heating apparatus in a building is subject to the conditions obtained in the chimney in the final analysis; no draft, no steam; no steam, no heat; no heat and the heating apparatus is useless whatever its design and efficiency may be. A recent survey on heating difficulties indicated a large proportion are traceable to the chimney or defects in the chimney. On small installations this is even more prone to happen than on larger work, for the small installations often have chimneys constructed by a mason contractor without regard to the exact size or height required and in total disregard to good chimney practice as far as producing maximum draft is concerned. It is not unusual to find offsets built into chimneys in smaller buildings or to find that the builder wants to use the chimney flue for several purposes outside of its legitimate function of producing draft for the heating apparatus.

The theory on which all chimney action takes place is that the gases in the chimney being hotter than the outside air and consequetly more expanded than the outside air will tend to rise just the same as hot water will rise in a hot water heating system, the hot water in the risers being lighter per cubic foot than the cooler water in the returns. To make this difference in weight between the gases in the chimney and the outside air of sufficient amount to produce the intensity of draft required it is necessary to have a certain height of chimney. The chimney will have to be higher where the draft required is greater and may be lower where the draft intensity is less. Draft intensity also is increased by having a greater temperature difference between the gases in the chimney and the outside air and is reduced by having a lesser temperature difference; this is why the leakage of cold air into a chimney not only reduces the actual area available for the boiler but also reduces the intensity of the draft by cooling the gases.

Draft intensity is the pull of the chimney at the base when filled with hot gases; it is the same for any chimney with a given average gas temperature, a given outside temperature and a given height. (See Fig. 2.) As soon as the gases start traveling up the chimney a friction or rubbing on the sides of the chimney results and this friction must be deducted from the theoretical draft produced by the chimney when the gases are not moving and the difference is the available draft at the bottom of the chimney. The available draft is what is shown

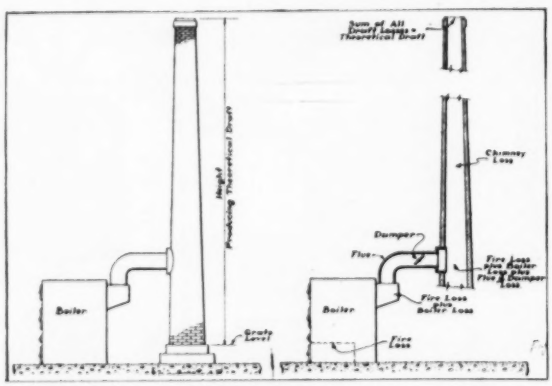


Fig. 2—The illustration at the left shows how the height of the chimney top above the grate level determines the theoretical draft while the right hand sketch shows points of draft loss

by the draft gauge located at the base of the chimney when the full boiler rating is being developed.

Care must be taken to distinguish in one's mind between the intensity of the draft and the volume of the draft. The intensity is the reading of the draft gauge while the volume is the quantity of gas being handled.

The volume of gases is the quantity of gas which must be handled from the combustion of the amount of fuel necessary for the boiler in question in order to develop its full rating and is primarily a function of the chimney area, whereas the intensity is a function of the chimney height. It follows, however, that a small chimney for a given amount of gas must be higher than a larger chimney for the same amount of gas since the larger chimney will have a lesser friction to be deducted from the theoretical draft due to the lesser velocity of the gas in the larger chimney. This explains why, when the chimney diameter is increased, it sometimes is possible to use a lower chimney and still get the same intensity as with a higher chimney of smaller diameter or area.

All of the draft loss does not occur in one place but, on the contrary, is a summation of all the individual draft losses occurring in the various parts of the apparatus. For example, there is a certain amount of loss as the air necessary for combustion passes through the fire and this depends on the fuel being used and on the rate of combustion to be obtained; it will be higher with the smaller sizes of coal than it will with the larger and it will be more with a high combustion rate than it will with the same fuel at a lower combustion rate. The loss of draft through the fire is termed the "fire loss" and is the most variable of all the losses. It will be seen that where the draft is insufficient it may be improved in the fire loss by

(a) Changing the type of fuel to one requiring less loss such as changing from pea to stove coal or from buckwheat to pea coal.

(b) By reducing the combustion rate, which may be accomplished either by enlarging the grate area or by reducing the load on the boiler so that such a high rate of combustion is not necessary.

The second point of draft loss is in the boiler itself and is caused by the friction of the gases of combustion passing through the boiler flues generally limited on cast iron boilers to between 0.15 and 0.25 in. of water. Steel firebox boilers usually range between 0.20 and 0.25 in. of water if not beyond their rating. When carrying an overload they will exceed this amount but in cases of low chimneys can be built with 4-in. tube and short flue travel so as to get down as low as 0.16 in. of water when necessary.

DRAFT IN BOILERS

Such boilers are special boilers, however, and must be so ordered. The brickset horizontal return tubular boiler will run around 0.20 inches of water at 100 per cent rating, 0.30 in. of water at 150 per cent rating and 0.45 in. of water at 200 per cent of rating. Of course it is customary practice to use stokers in such cases to take the fire loss off of the chimney and thus to keep down the chimney heights required.

After the boiler draft loss is the breeching and damper loss which consists of the friction developed by the gases in passing through the breeching, making the turns necessary to flow from the boiler smoke outlet to the bottom of the chimney and to pass any dampers or other obstructions in the breeching on the way. For this reason a straight breeching with easy turns from the boiler smoke outlet into the breeching and from the breeching into the chimney will have a lesser draft loss than a breeching with more elbows and of less radius. Besides this is the draft loss in the chimney itself which is caused by the rubbing of the gases on the sides of the chimney as the flow upward toward the top. The losses are illustrated in Fig. 2 and the sum of the losses actually developed must not exceed the theoretical draft developed by the chimney or the draft will be impaired.

On large installations it is necessary to calculate the chimney requirements very carefully and to provide a chimney which has sufficient height to develop the intensity of draft required as well as the area to carry off the quantity of gases to be developed. In small work the chimney requirements are just as exacting but the variation of the work is much less. By this is meant that there usually is no condition of overload to be considered, watertube boilers seldom are used and the heights and size of chimney will show a much less variation than in the larger plants. For this reason many

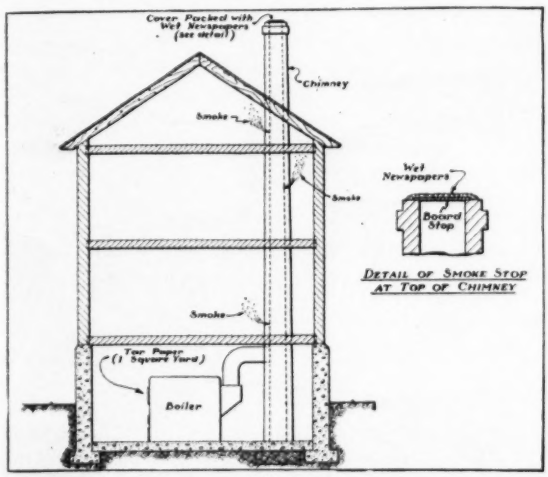


Fig. 3—This drawing indicates a method of testing a chimney to find if it is smoke tight

manufacturers of low pressure heating boilers recommend the sizes and heights of chimney necessary for their particular boilers in order to produce the rated capacity but these sizes must not be assumed to be adequate for the smaller sizes of coal such as pea coal, buckwheat coal, rice coal or screenings. In case these grades of coal are to be utilized it is customary to go to pinhole grates with blowers or to stokers with blowers as otherwise the chimney heights become too great for the ordinary small structure to accommodate.

In TABLE I is given a schedule of chimney heights and sizes recommended by one manufacturer for the ordinary type of cast iron boiler which probably would be quite satisfactory for all makes of cast iron boiler outside of the magazine type intended for the burning of buckwheat. TABLE II is a similar table for steel firebox boilers and it should be noted that there is more variation in the chimney heights for the firebox type than in the cast iron type so that the contractor and designer should always check up the particular boiler which he intends to use on a chimney of given size with the manufacturer's recommendations for that particular boiler as—in case of inadequate height—there are ways in steel boilers of remedying the difficulty if that fact is realized early enough. In automatic heat oil fires require only about 2/3 of the chimney area considered adequate for coal and the fire draft loss is eliminated altogether. This permits a reduction of chimney area as well as height required while a gas fire not only eliminates the fire loss but the boiler loss as well. It will be remembered in connection with this that the gas fired boiler has an interceptor installed just above the smoke outlet—if the outlet on a gas boiler can be so termed—and therefore there is no draft loss on either the boiler or fire as far as the chimney is concerned. Of course a stoker or other type of combustion device which includes forced draft will take the fire draft loss off of the chimney but it will not reduce the area required to any extent.

The contractor installing the heating plant may have checked the size of the chimney as well as its height and found both satisfactory; in spite of this he has no control of the actual building of the chimney and it is quite possible for a poorly constructed chimney of proper size and proportions to still give inadequate draft due to leakage caused by improper mason work. As such leaks are inward there is little likelihood of their being discovered until either a windy day comes along and sparks are blown out into the building with the probability of starting a fire, or until the heating system is called on to deliver 100 per cent of its capacity which only will occur when the minimum outside temperature is experienced.

Table I

Chimney Sizes Recommended for Sectional Cast Iron Boilers

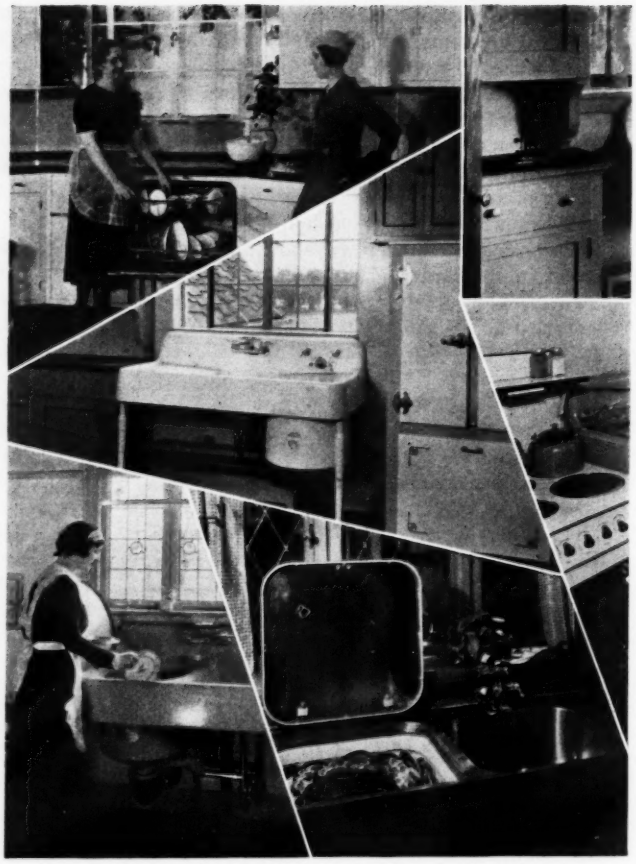
Sq. Ft. of E.D.R. Steam at 240 Btu	Boiler Rating Water at 150 Btu	Size In.	Height Ft.
600	960	8 x 12	30
900	1440	8 x 12	35
1200	1920	8 x 12	40
1600	2560	12 x 16	35
2800	4480	16 x 20	50
3800	6080	20 x 20	50
5750	9200	20 x 20	55
7050	11280	20 x 24	60

Table II

Chimney Sizes Recommended for Steel Firebox Boilers

Boiler Rating Sq. Ft.	Hp.	Diameter In.	Height Ft.
600	4.3		
900	6.4		
1200	8.5	12	45
1600	11.4	12	45
2800	20.	13	60
3810	27.1	16	60
5750	41.	16	70
7050	50.	22	65

There is a simple method of testing any chimney, however, which will settle once and for all if it is tight or if it has leaks. This consists of building a fairly good wood fire in the boiler and after it has been well started of throwing in a square yard or so of tar paper which will produce a dense smoke; then—as soon as this smoke makes its appearance at the top of the chimney—the top is shut off either with a wet blanket, or by a light wood cover over which wet newspapers are spread and packed around the edges so as to get practically an airtight joint. If the chimney is airtight and has no serious leaks no smoke will come out of the sides but if leaks exist they will betray themselves by the smoke finding its way out of the chimney through these openings and giving visible evidence on the outside of their existence (see Fig. 3.) This is continued for a period of about five minutes and, if no smoke appears coming through the sides of the chimney during that time, the chimney can be considered as being tight.



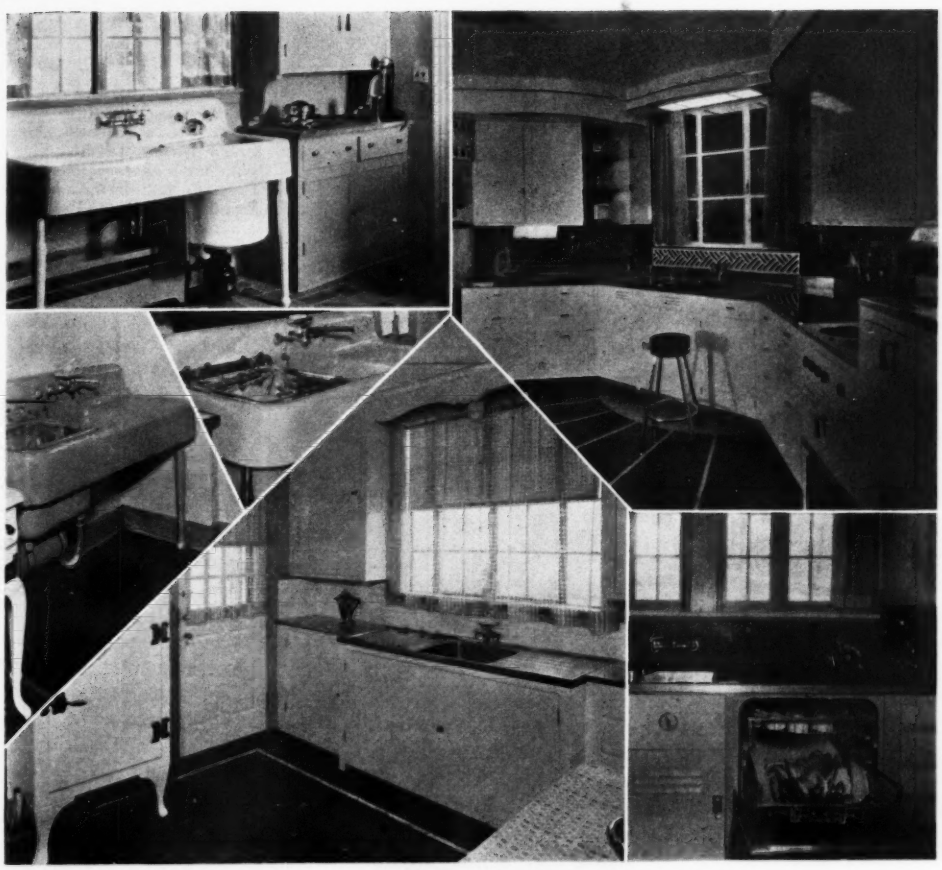
Groups Active in Promoting Kitchen Sales

Plumbing dealers are laying plans for obtaining this business as a part of their merchandising

LETTERS, news items, field studies and similar positive indications continually are coming in to us to indicate the increasing interest and activity among plumbing dealers and plumbing contractor groups in the subject of domestic appliances, especially those related to the kitchen. Groups of such dealers in various sections of the country are getting all of the information available on this subject and in many cases they are working out definite plans for combining the sales of general kitchen appliances with their regular merchandising activities. As one specific example, a letter from the President of the Master Plumbers' Association of Connecticut, I. B. Skau, states, "In respect to all electric kitchens, I may write that just this very afternoon a representative group of plumbers had a conference with a selling agency on this subject. We have agreed upon some constructive ideas for the future handling of this merchandise and as to how the master plumber is to obtain this proposed business."

One indication of the field for domestic appliances in kitchens is pointed out in the following survey.

Common every day dishwashing is the most onerous of all household tasks, according to recently completed survey. This fact was established through written interviews with one thousand housewives of northern Ohio. Laundering was listed as a close second, with housecleaning as the third most disagreeable home duty.



"Dishwashing has been the subject of considerable research by home economists who have analyzed it in terms of time consumed, cost, sanitation and the like"

In conducting the survey, leading questions were not asked. The housewife made her own listing, without suggestion on the part of the surveyors. Those to whom the questions were directed were asked to list all household tasks in the order of their onerousness. Following dishwashing, laundering and housecleaning, came cooking, operating the heating plant, planning and serving irregular meals, window washing, silver cleaning.

DISHWASHING IS SUBECT OF RESEARCH

The survey developed the fact that 39.5 per cent of husbands help with the dishwashing, and disclosed the fact that the husbands "detested" the job. The survey was conducted by an outside agency and no mention of any appliance manufacturer was made.

"Dishwashing," says Miss Nolan, the home service director of the institute conducting the survey, "has been the subject of considerable research work by home economists and others who have analyzed the job of dishwashing in terms of time consumed, cost, sanitation and a number of other angles.

"It long has been recognized that if the intelligent woman could be made to visualize the dishwashing job she lets herself in for when she promises to 'love, honor and obey,' she would be much more receptive toward buying a dishwasher which would do electrically a job she would otherwise have to do by hand."

Supplementing the survey of one thousand housewives, a number of interesting statistics on the dishwashing job in the average American home have been compiled. These figures show:

That over a period of 30 years, the average woman, with three children, washes a total of 1,026,745 dishes, 792,050 pieces of silverware, 157,680 kitchen utensils, 124,830 pots and pans; or a grand total of 2,101,305 pieces.

That with an electric dishwasher, she would save at least 320 hours a year in a home with three children. This amounts to 40 eight-hour working days a year; giving her more time for recreation, self-improvement, child-training, pleasure.

Aside from such facts, the most powerful health story ever attributed to an electric household appliance is back of the electric dishwasher. Dishes washed by hand are alarming breeding places of germs, the institute points out. Regardless of how clean they may appear, they are responsible for the spread of grippe, influenza, common colds and many other contagious diseases.

"Growing evidence is being uncovered constantly by laboratories and public health tests indicating the heretofore neglected but important relation of proper dishwashing to the spread of communicable disease," authorities state.

"The spread of contagion from this source forms

"Of all household tasks," according to a recently completed survey, "dishwashing is the most onerous. Next in line are laundering, house cleaning, cooking and operating a heating plant"

the basis of amazing facts and figures that should be made known to the general public. Leading public health authorities and life insurance companies urge the spread of propaganda that will influence a better control of dishwashing in the home, as well as in public eating places. Ordinary hand-washing of dishes, glassware and silverware may remove food particles, but it fails utterly in safely removing or destroying bacteria. Tableware must be washed in water hotter than the human hands can stand. The dish-rag, unpleasant to handle, always is a breeding place for dangerous germs, millions of which find their way to dishes and glasses. This is why physicians themselves recommend the modern sanitary machine method of washing dishes for all homes."

Here are excerpts from printed articles by various health authorities, pertaining to dishwashing and its relation to health:

"One of the most potent sources of danger from the standpoint of sanitation in restaurant inspection is the matter of cleaning and handling dishes and utensils in public eating places," according to an article on "Comparison of the Bacterial Counts from Machine and Hand-washed Dishes and Their Significance," by Roy S. Dearstyle, city health department, Charlotte, N. C., in the American Journal of Public Health. The comparison showed that the bacterial count on machine-washed dishes was negligible in relation to that on hand-washed dishes.

"Dishwashing, both in the home and in public eating establishments, often is perfunctory," says an article by W. W. Peter, M.D., Dr. P. H. and Grace T. Hallock, of Health Service, Cleanliness Institute. "Half-cleaned dishes are hastily wiped with a towel which may be used over and over again on a large number of utensils. Dishes so washed and wiped may look clean, but mere optical cleanliness is unreliable. Not every dish that shines is safe for use.

"That dishes possibly are vehicles for disease transmission is recognized in the laws against common drinking cups and in the practice of sterilizing dishes used by patients suffering from infectious diseases," says Wallace A. Manheimer, Ph. D., assisted by Theresa Yhanez, Research Laboratory, Department of Health, New York City, in the American Journal of Public Health. "Our inspections convinced us that this method (hand-washing) is highly unsatisfactory. Dishwater is not changed frequently enough, dishes are insufficiently rinsed, soiled towels are used for drying. . . . The bacterial counts of water from the mechanical washer were consistently low. These figures offer a striking contrast to those obtained from hand washing tests. . . . The time of exposure and the temperature of the water were sufficient to kill all non-spore-bearing organisms."

"Just this very afternoon a representative group of plumbers had a conference on how to handle the merchandising of kitchen appliances"

Sell Water Heating with Close Estimates

By B. L. Mathews

This is the time of the year when home owners think about summer water heating. Can you figure their hot water jobs on an accurate basis?

EVERY plumbing and heating contractor should possess the information for correctly sizing the gas fired hot water storage system. While much has been written on this subject, the purpose of this article is to give clearly and briefly the information and tables necessary for computing the problem quickly and accurately. It is understood, of course, that there are many variables in this subject. In the final analysis, success in this work is dependent upon experience and a careful understanding of the habits and requirements of the occupants involved.

It is vitally important to sell the correct size of storage system to take care of the known demands. This cannot be done by guess work. To undersize the job will result in complaints and dissatisfaction. An attempt to remedy the situation usually proves expensive to the contractor, probably wiping out the profit on the installation.

To oversize the storage system incurs the risk of losing the sale due to excessive initial cost. A little time taken to carefully estimate the installation results in a satisfied customer; satisfied both with the initial cost and the service obtained thereafter.

The need or demand for hot water is the basis of all problems in hot water supply. Too much information cannot be obtained on the subject. One should determine the amount of hot water needed and the time at which the greater portion is used. In other words, the time and extent of the peak load should be known. Many complaints result from a lack of knowledge or forethought of the above. The gas fired heater may be

able to supply the amount of hot water used over a twenty-four hour day and still fail to deliver the hot water required during the peak load.

Table I

Maximum Daily Requirements for Hot Water, Gallons for 24 Hours

Apartments and Private Dwellings Including Laundry

Rooms per suite	Number of bathrooms				
	1	2	3	4	5
1	60				
2	70				
3	80				
4	90	120			
5	100	140			
6	120	160	200		
7	140	180	220		
8	160	200	240	250	
9	180	220	260	275	
10	200	240	280	300	
11		260	300	340	
12		280	325	380	450
13		300	350	420	500
14			375	460	550
15			400	500	600
16				540	650
17				580	700
18				620	750
19					800
20					850

It is recommended that the problem be worked out according to the following plan:

1. Determine the water required over a period of twenty-four hours.
2. Estimate the duration of the peak load and the gallons of water needed per hour of peak load.
3. Select size of storage tank.
4. Compute size of heater.

Table II

Maximum Daily Requirements for Hot Water, Gallons for 24 Hours

Hotels

Room, with basin	10 gals. per day
Room, with bath—	
Transient	40 gals. per day
Resident (bachelor)	40 gals. per day
Resident (women)	70 gals. per day
Resident (mixed)	60 gals. per day
Two rooms and bath	80 gals. per day
Three rooms and bath	100 gals. per day
Public bath	150 gals. per day
Public shower	200 gals. per day
Public basin	150 gals. per day
Slop sink for cleaning	30 gals. per day

The third and fourth steps are closely allied as the size of the storage tank determines to some extent the heater capacity necessary and vice versa.

Tables one, two and three are used to estimate the amount of hot water that will be consumed. Table four gives an estimate of the peak load for different installations, while table five gives a rough estimate on the storage capacity desired.

Referring to table one, we find that the occupants of a five room house with one bath should require 100 gallons of hot water per day. A seven room house with two baths should call for 180 gallons of hot water a day.

The peak load for a private home is one seventh of the maximum daily requirements over a four-hour period. In the first case it is necessary, during the peak load, to be able to supply fourteen gallons of hot water per hour over a four-hour period. The second case demands twenty-five and seven-tenths gallons per hour over a four-hour period.

The hot water requirements for apartment houses are determined from the same table. For instance, a four-suite apartment with five rooms including one bath to a suite would require 100 gallons per day per suite or 400 gallons daily. Similarly the peak requirements would demand 40 gallons an hour for a possible four-hour duration.

In a like manner the hot water requirements can be

Table III

Maximum Daily Requirements for Hot Water, Gallons for 24 Hours

Restaurants

Average price of meal	Consumption for hand dishwashing	Consumption for machine dishwashing
$0.50	1.0 gals. per meal	1.5 gals. per meal
1.00	1.5 gals. per meal	2.5 gals. per meal
1.50	2.0 gals. per meal	4.5 gals. per meal

Lofts and Offices

Office help, per person	2 gals. per day
Factory help, per person	5 gals. per day
Cleaning, per 10,000 sq. ft	30 gals. per day

computed for the hotel, factory or restaurant. For a restaurant, the hot water used varies according to the average price of the meal and also the method of washing the dishes (hand or machine washing). The peak load varies with the classification, one meal, two meals, or all day restaurant.

The tables used for computing the hot water needed for hotels and factories are self explanatory.

The hot water storage system consists of a heater for heating the water, a tank for storing the heated water, a method of delivering the hot water from the heater to the tank, and also a system of piping for delivery of the hot water from the storage tank to the faucet. The first

Table IV

Peak Demands

For private dwellings and apartments the peak hourly demand is approximately one-seventh of the daily volume. The peak load may continue over a period of four hours.

For office buildings the peak demand is about one-seventh of daily consumption, with a duration of about two hours.

All day restaurants have a relatively small peak load. Restaurants serving one meal per day have a peak hourly demand of one-fifth the daily consumption for a two-hour period.

Factory peak loads should be taken for a one-hour period at about one-third the daily consumption.

two items are the only ones related to the problem in question.

Table No. 6 gives the capacity and dimensions of standard range boiler sizes. For large volume storage systems it is possible to pick the tank or boiler from table No. 7. It should be noted that it is possible to pick two or three tanks of approximately the same

capacity but of different dimensions. This is desirable where it is necessary to install the built-up system in a limited or confined space.

Table V

Capacity of Storage Tanks

Private dwellings and apartments require approximate storage capacity equal to one-fifth the daily quantity of water used.

Hotels and restaurants require storage of about one-tenth the total daily consumption.

Office buildings should have one-sixth of the daily demand taken care of in storage capacity.

One meal restaurants and factories require a storage capacity of about 40% of the daily volume.

In remodeling an old unit it is often necessary to figure the size of the storage tank already in place. The following formula probably gives the fastest mental calculation obtainable. The capacity of any round tank in gallons is equal to the diameter squared multiplied by length and multiplied by 6. The diameter and length of tank should be measured in feet. For a more accurate calculation 5.9 should be used as a constant instead of 6.

The amount of hot water that can be delivered by

Table VI

Standard Range Boiler Sizes

12"x36"	18 gal.	18"x60"	66 gal.
12"x48"	24 gal.	20"x60"	82 gal.
12"x60"	30 gal.	22"x60"	100 gal.
14"x48"	32 gal.	24"x60"	120 gal.
14"x60"	40 gal.	24"x72"	144 gal.
16"x48"	42 gal.	24"x92"	192 gal.
16"x60"	52 gal.		

any gas fired hot water heater can readily be determined from table No. 8. This is a very handy table inasmuch as it is possible to check on a water heater in question. The capacity or recovery of a heater is naturally determined by the efficiency of the heater and how hot the water is heated. The average heater efficiency varies from 65 to 70 per cent. The gas input rating is the third factor and this is usually printed on the name plate as the rated Btu. input. Knowing the rating and assuming the efficiency to be 70 per cent and desiring a 60, 80 or 100 degree rise above room temperature, it is possible

Table VII

Number of Gallons in Round Tanks

Length in Ft.	Diameter—Inches									
	18	24	30	36	42	48	54	60	66	72
2	26	47	73	105	144	188	238	294	356	424
2½	33	59	90	131	180	235	298	367	445	530
3	40	71	109	157	216	282	357	440	534	636
3½	47	83	127	183	252	329	416	513	623	742
4	54	95	145	209	288	376	475	586	712	848
4½	61	107	163	235	324	423	534	659	801	954
5	68	119	180	261	360	470	593	732	890	1060
5½	75	131	200	287	396	517	652	805	979	1166
6	82	143	217	313	432	564	711	878	1068	1272
6½	89	155	235	339	468	611	770	951	1157	1378
7	96	167	253	365	504	658	829	1024	1246	1484
7½	103	179	271	391	540	705	888	1097	1335	1590
8	110	191	289	417	576	752	947	1170	1424	1696
8½		203	307	443	612	799	1006	1243	1513	1802
10		239	361	521	720	940	1183	1462	1780	2120
12		287	433	625	864	1128	1419	1754	2136	2544
14					1008	1316	1655	2046	2492	2968
16					1152	1504	1891	2338	2848	3392
18							2127	2630	3204	3816
20							2363	2922	3560	4240

to find the capacity of any gas fired water heater from table No. 8.

For instance, a heater with an input rating of 35,000 Btu. per hour and an efficiency of 65 per cent can deliver 46 gallons per hour on the basis of a 60 deg. rise in water temperature. Likewise, it can give 34.7 gallons on an 80 deg. rise and 27.9 gallons on a 100 deg. rise. A heater with the same gas input but with a 70 per cent efficiency can produce on the basis of 60, 80 and 100 deg. rise, 49.5, 37.3 and 30 gallons of hot water per hour, respectively.

Table VIII

Number of Gallons of Hot Water to Be Had from Any Water Heater in One Hour, with Varying Gas Consumption and Efficiency for Temperature Rises of 60, 80 and 100 Degrees

Burner Consumption	60% Efficiency			65% Efficiency			70% Efficiency		
	Rise			Rise			Rise		
B. T. U. Per Hour.	60°	80°	100°	60°	80°	100°	60°	80°	100°
6000	7.3	5.5	4.4	7.9	5.9	4.8	8.5	6.4	5.2
7000	8.5	6.4	5.2	9.2	6.9	5.6	9.9	7.5	6.0
8000	9.7	7.3	5.9	10.5	7.9	6.4	11.3	8.5	6.9
9000	10.9	8.2	6.6	11.8	8.9	7.2	12.7	9.6	7.8
10000	12.1	9.2	7.4	13.1	9.9	8.0	14.1	10.7	8.6
15000	18.2	13.7	11.1	19.7	14.9	12.0	21.2	16.0	12.9
20000	24.2	18.3	14.7	26.3	19.8	16.0	28.3	21.3	17.2
25000	30.3	22.9	18.4	32.9	24.8	20.0	35.4	26.7	21.5
30000	36.4	27.5	22.1	39.4	29.7	23.9	42.4	32.0	25.8
35000	42.4	32.0	25.8	46.0	34.7	27.9	49.5	37.3	30.0
40000	48.5	36.6	29.5	52.6	39.6	31.9	56.6	42.7	39.4
45000	54.5	41.2	33.2	59.1	44.6	35.9	63.6	48.0	38.6
50000	60.6	45.8	36.9	65.7	49.6	39.9	70.7	53.4	42.9
55000	66.7	50.3	40.5	72.3	54.5	43.9	77.8	58.7	47.2
60000	72.7	54.9	44.2	78.8	59.5	47.9	84.8	64.0	51.5
65000	78.8	59.5	47.9	85.4	64.4	51.9	91.9	69.4	55.8
70000	84.8	64.1	51.6	92.0	69.4	55.9	99.0	74.7	60.2
75000	90.9	68.6	55.3	98.6	74.3	59.9	106.0	80.0	64.4
80000	97.0	73.2	59.0	105.1	79.3	63.8	113.1	85.4	68.7
85000	103.0	77.8	62.6	111.7	84.2	67.8	120.2	90.7	83.0
90000	109.1	82.4	66.3	118.3	89.2	71.8	127.3	96.0	77.3
95000	115.1	86.9	70.0	124.8	94.1	75.8	134.3	101.4	81.6
100000	121.2	91.5	73.7	131.4	99.1	79.8	141.4	106.7	85.9

Plumbers and Utilities Boost

By I. B. SKAU
President, Master Plumbers' Association of Connecticut, Inc.

DURING the year 1933, master plumbers in the territories of the six larger gas and electric companies in Connecticut earned $38,162.39 as commissions and bonuses for gas and electric appliances they sold or rented under cooperative dealer arrangements. In addition, these master plumbers and heating contractors earned $16,-$460.00 for installing gas and electric automatic storage water heaters. These payments total $54,622.39 for the year. Allowances paid by utility companies for old equipment taken out is not included in the foregoing sums, for such allowances are passed on to the customer by the master plumber.

About 210 plumber firms sold and installed these appliances and shared in the $38,162.39 of profits. This income was more than ordinarily welcome during the dismal days of 1933. By the same token, the additional cubic feet of gas and kilowatts of electricity that these appliances now consume are revenue assets of substantial value to the utility companies.

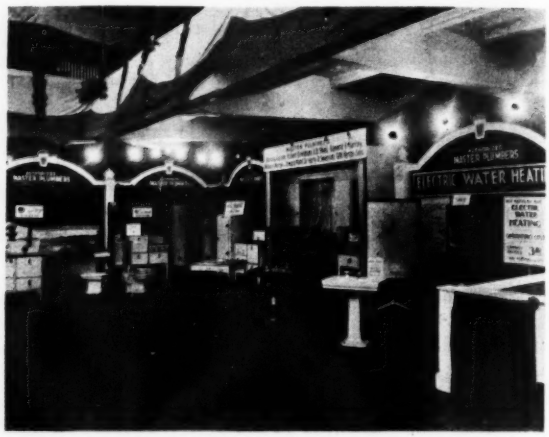
The gas or electric appliances these master plumbers sold or rented totaled $173,466.91, cash retail price. So sizable a volume of business done during a year like 1933 is not easily laughed off.

These same plumbers have set a 1934 quota that is substantially higher than the 1933 results. Here are the kinds of appliances that these cooperating master plumbers placed in Connecticut homes:

611 gas ranges with insulated ovens
417 gas automatic storage water heaters
81 electric automatic storage water heaters
146 gas refrigerators
13 gas house heating installations
60 other electric and gas appliances

1328—total appliance units

Cooperating master plumbers in the territories of seven other gas and/or electric companies in the state that operate on a smaller scale also sold appliances along similar lines but in varying degree. Although the volume of these transactions taken together is sizable, the figures have not been collected and are not included in the foregoing. Nor do the above figures take into account the water heaters and ranges that these same master plumbers have sold from their own stocks independently of the gas or electric company. In many of these cases, the utility company's contact man has assisted the master plumber in selling his own line. This selling aid by the company's specialist and contact man is supplied without cost to the master plumber.



A co-operative exhibit by eight Hartford, Conn., plumbing dealers

PROPORTION OF BUSINESS IS HIGH

The state Plumber-Utility Joint Committee secured official figures recently on appliance sales and rentals that were closed by master plumbers during 1933 in co-operation with gas and electric companies. This is the source of the figures given herein. Among other things the canvass shows that the business done by master plumbers is a respectable portion of the total closed by the utility company and the master plumbers taken together. In the case of one of the large gas companies, the master plumbers did 28.7 per cent of all the appliance business; for another company, the master plumbers are responsible for 24 per cent of the combined total. Considering water heaters alone, 53 per cent of all sales cleared through one company were handled by master plumbers. No further argument is needed to establish them as an important factor in the situation.

Cooperation on these lines is practised generally over the state although there are a few "dead spots" where conditions at this time do not favor going after sales on lines of organized co-operation. All types of Connecticut communities are represented: from the large population centers, notably Hartford and New Haven, and on down through the smaller cities to numerous rural towns and villages. In some localities, gas and electricity is supplied by one utility company; in others one company sells gas, and a competing company supplies the electricity. With a few exceptions, such differences do

Connecticut Appliance Sales

not in themselves occasion any important variation in the co-operation extended to the master plumber trade.

Here's how plumber-utility cooperation works out in one city. During last year, 1933, the gas company paid master plumbers in the area served by its lines, a total of $17,809.09 in commissions on aggregate sales of $74,517.62. Let's look at it from the percentage angle. These two figures show a profit of 23.9 per cent! And there are no strings to whittle it down—no work collecting instalment payments, no non-payment losses, no servicing expense, no money tied up in inventory! A good product; a satisfied customer, and a responsible firm to deal with that carries out its word. That is the reason these cooperative selling plans are attracting all ranks of reputable firms in the trade from the largest to the smaller but much more numerous one-man shops.

390
Chicago Plumbers
Crash through
with liberal offer
Automatic gas water heater
installed on 60 days trial
Consult Your
Master Plumber
— Dealer —
He's Qualified
Ask Your Plumber
When anything goes wrong with your water heating system, ask your plumber. He is equipped by experience and training to give you complete information about the modern methods of water heating, and can furnish electric water heating on all the various rental and purchase plans.

More utilities are now advertising sales through plumbers

Three years ago the gas company and the plumber trade were at loggerheads. The local association would have nothing to do with the gas company—both were antagonistic, a few firms excepted. Years before, the company had ridden rough shod over master plumbers and in later years the company's methods still irritated them. Of this the management was not aware.

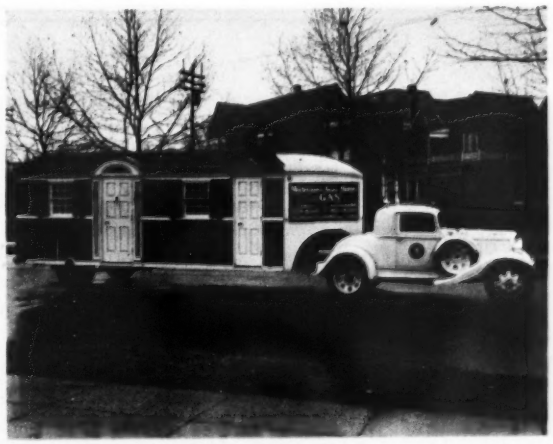
On request of our state association, a small committee of our local organization met with the president of the company in May 1932 to consider what to do in order to break down these antagonisms. More conferences; then our opinions of each other changed and mutual esteem grew where distrust formerly thrived. Offensive aspects of the company's selling methods were eliminated. Our local association impressed on the trade the advantages of working harmoniously with the company. Get-acquainted smokers brought together the local trade and the company personnel, from president to salesmen. In about twelve months time the entire situation changed with distinct benefit for both parties. The company's more liberal selling plans demonstrated their profit possibilities and we found them to be square. Recognition of this marked the turning point.

START OF PROGRAM

In recent months, I have been asked on several occasions, "How did you get started with the utility companies in your state?" and "What's your plan, how do you operate?" I will try to answer these questions in the order given. In February 1932, J. E. Berger, then president of our state association, addressed a letter to P. W. Donoghue, then president of the National Association of Master Plumbers. He referred to the understanding reached in June 1931 between the N.A.M.P. and the American Gas Association which Jere L. Murphy of the first named organization was largely instrumental in negotiating. This agreement refers to procedure for handling controversies between master plumbers and gas and electric companies in their localities. Mr. Berger's communication, sent to the national association in accord with this procedure, pointed to the existence of irritating situations relating to appliance merchandising in Connecticut that were in need of correction if rankling ill will was to be checked.

A few weeks later Mr. Berger received a stranger,

(Continued on Page 156)



Traveling exhibit of a Pennsylvania utility

"Taking off material from a plan can become very laborious unless a little system is injected into it."

Estimates Protect

The author, A. E. Knibb, tells us one reason for this article is that the other day a contractor came into his office all excited over a contract just awarded at a seemingly ridiculous figure. He seemed to think estimating a complex matter and that some contractors were not correct in it

THE task of estimating, from plans and specifications, the quantities of materials and the amount of labor required on a proposed heating installation is a very important one, for on it depends, to a great extent, the success or failure of the contractor involved. Much has been written on estimates and how to make them, and the whole subject could be boiled down to two words—"don't guess." But it is hard to imagine anything requiring more high-powered guess-work than the average heating estimate. An incident illustrating this will always remain in mind, although it happened a good many years ago. A large factory heating project was being figured, and the job consisted of several scattered buildings served by a power house, which also supplied steam for an engine driven generator. This unit was to be installed by the owner, but no idea could be obtained from him as to what finally would be bought. The specifications called for a steam separator to be installed in the 10-in. steam line to the engine, but nothing could be determined as to the style or type required. So a cast steel separator, of high grade quality, was priced

and the estimator guessed he was well protected on that item. However, the maker of the engine that was finally decided on insisted upon the provision of an entirely different type of separator, involving the expenditure by the heating contractor of several hundred dollars over the amount he had estimated. So it seems that, in some instances, if you guess you are wrong, and if you do not guess, you still are wrong. An estimator should know his subject thoroughly, and be familiar with the various operations that take place in the field. It is not enough for him to recognize that a right angle in the line designating the steam main on the drawing represents a 90-deg. elbow. It would help him to know what happens from the time the mechanic on the job picks it from the pile of fittings until it is finally in place. Most of the drawings involving heating layouts are made by experienced engineers and usually little or no trouble is encountered in reading them. And after looking at several different plans from the same source, they can be recognized as readily as the handwriting of the individual and the peculiarities of design used by him are brought to mind.

IMPORTANCE OF DETAILS

These peculiarities should be thought of in estimating, for they often mean the difference between a profitable and an unprofitable contract. Occasionally, plans and specifications are met with in which the heating layout has been made by a man unfamiliar with the subject and, in this case, considerable caution should be exercised, for more often than not, the plans and specifications are strangers one with the other. The specs may call for a full-size dirt pocket before each drip-trap, yet a detail on the plan may show a beautiful drawing of a strainer, correctly bypassed. The estimator knows full well in his own mind that the designer was blissfully unaware of

Your Heating Profits

any difference existing between a dirt pocket, consisting of a couple of nipples, a tee and a cap, and a strainer with a three-valve bypass. And that word, "full-size" can have a kick like a mule. The best course to pursue in a case of this kind would be to state very plainly in the bid exactly what the price includes, and what addition or deduction may be made in the event some other method of installation is adopted. In other words, do not guess that you will be allowed your own way once you are awarded the contract.

Taking off materials from a plan can become very laborious unless a little system is injected into the work, and in these days of skeletonized office forces, when the estimator is of necessity compelled to divide his time between the telephone, and other disturbers of the peace, and his plans, rather more of that latter ingredient is required than was the case in the past. Very obviously, the first thing to do preparatory to figuring a job is to read through the specifications, and while doing this, it might save time to have two sheets of paper near at hand. On one jot down items of equipment on which quotations must be obtained, and on the other make notes as to the kind of material to be figured, in this manner.

Steam main—3-ply air-cell covering.
Return main—Not covered.
All risers—Not covered.
Underground return in 6-in. crock—3-ply covering.
Steam risers valved.

and so on, listing each item which must be remembered.

LIST IS TIME SAVER

With this list, usually one perusal of the specifications will be sufficient, and much time saved later on. On tackling the drawings, a few minutes will be well spent in glancing over the floor plans, familiarizing oneself with the elevations and the general layout of the building. Then it might be as well to take off the more obvious materials first, such as, radiation, unit ventilators, etc., for while this is being done, the system can be more carefully scrutinized and peculiarities noted. As each unit is written down on the take off sheet, the corresponding symbol on the plan should be clearly marked with red pencil. If this red pencil is held in the left hand, the operation can be quickly performed, and no guess work is needed as to what was taken off and what was missed. This left-handed red penciling habit should be cultivated and used on every fitting and every length of pipe, for it will enable the estimator to leave his work at a moment's notice and return to it, with the full knowledge that he is starting again at the exact point he left off. Different colors may be used.

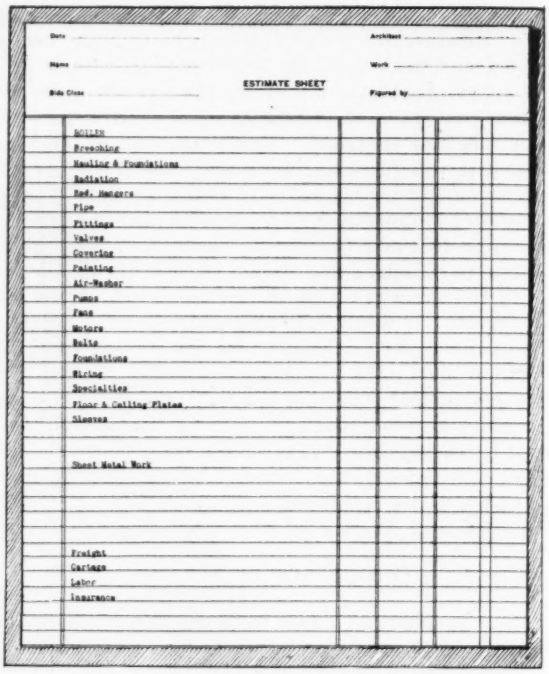
The writer has never used printed forms on which to list material, but has been content to use ordinary yellow second sheets, roughly ruled and headed, as shown by Fig. 1. They take but a minute to make and can be adapted to any type of job. In commencing to list pipe and fittings, it is logical to start at the boiler. If this is shown on the drawing as a square, with the main as a line leading from it, then it would be wise to make a rough sketch, in isometric, on the back of the take-off sheet, showing the method of constructing the header, and the position of tees, elbows, flanges, etc., checking from a catalog the size and number of openings in the boiler, and marking them down on the sketch. A few seconds spent in indicating the arrangement at the ends of steam mains, drip points, termination of risers, etc., by a few lines on the back of the same sheet is worth while, and

serves as a record of the method decided upon for future reference.

The fittings around the boiler being now listed and marked on the plan in red pencil it is in order to start on the distributing system, and if the installation is of any extent, it might be helpful to list the steam side on one work sheet, and the return side on another sheet, marking them "Steam mains, branches and risers" and "Return mains, branches and risers" respectively. Starting from the opening on the steam header at the boiler, mark off each tee on the drawing with the red pencil held in the left hand and enter it against its size under the "Tee" column. It might be more convenient to add the fittings mentally until a change in size occurs, and enter the total in the column, not forgetting, if it is ten or more, to encircle the number to indicate that fact. If the type of system demands it, enter up an eccentric reducer, with its attendant nipple, at each reduction in size.

FITTINGS ARE IN ORDER

The fittings on the branches off the main are next in order for listing, and if they are not sized on the drawing, the pipe diameters should be marked in yellow pencil. This will prevent a lot of guesswork and will save considerable time. The same procedure can be adopted here as with the tees on the main, the number of branches of each size added mentally and the totals of the various fittings required placed in their respective columns. The return mains and branches can be handled in the same manner. Fittings on the risers can be quickly computed by noting the number of radiators on each floor and allowing the necessary number of elbows and nipples for each one, adding the extra tees where two or more radiators on the same floor are supplied from one riser. After the fittings, valves, drip traps, etc., are all listed, the quantities of pipe can be taken off the plans, and for this purpose the map measure or chartometer, is a valuable ally. Costing but a few dollars at any drawing instrument dealer's store it will pay for itself many times over in time saved. With its aid, the lengths of pipe can be quickly measured, but it must be remembered to add a sufficient quantity of the proper sizes to allow for vertical rises or drops, and it should be mentioned here that it must be decided whether or not the radiators will have a top supply connection. Pipe hangers and coverings can be readily computed from the pipe list, if the various portions of the system are listed separately


ESTIMATE SHEET

Date ____ Architect ____

Name ____ Work ____

Bids Close ____ Figured by ____

Boiler					
Breeching					
Hauling & Foundations					
Radiation					
Rad. Hangers					
Pipe					
Fittings					
Valves					
Covering					
Painting					
Air-Washer					
Pumps					
Fans					
Motors					
Belts					
Foundations					
Wiring					
Specialties					
Floor & Ceiling Plates					
Sleeves					
Sheet Metal Work					
Freight					
Cartage					
Labor					
Insurance					

Fig. 2—This typewritten form provides a means for entering and totaling separately each class of material

and marked as shown in Fig. 1. The painting of pipes and radiators usually is performed by the heating contractor, and this work lends itself very well to a unit price estimate—so much per foot run of pipe and per square foot of radiator surface.

In making the final estimate, some thought should be given to the subject of odds and ends, so that small, and often forgotten, items are included. These comprise lag screws, nuts and bolts, gasket materials, etc., which, if not listed separately, should be accounted for in a lump sum usually designated as "Miscellaneous."

When all the materials are marked down on the work sheet, then it will be necessary to list them on the final estimate sheet, so that the items can be priced. As the various materials are grouped together, it will be a simple matter to enter them on the sheet, in the same manner, and marking down their cost will be quickly accomplished if the Pricing Sheet is used. The items can be totaled at the bottom of each page and the amount carried forward to the top of the next page, or each class of material can be totaled separately, and entered on a typewritten form, such as Fig. 2, which is used to arrive at the final figures. The latter course is to be desired, because it shows at a glance that every item is present and accounted for. The rough work sheets and the final sheets containing the prices should be pinned together and kept for reference.

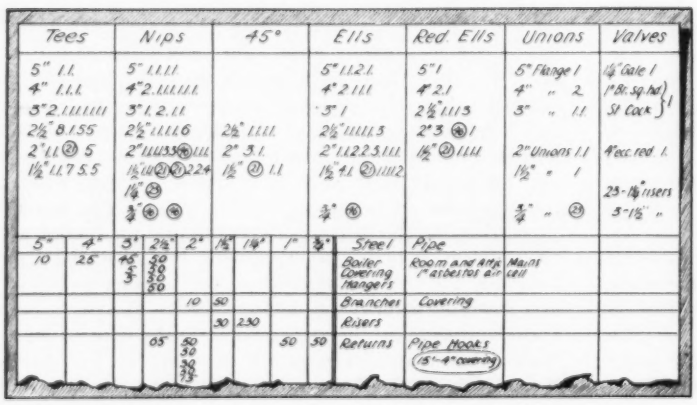
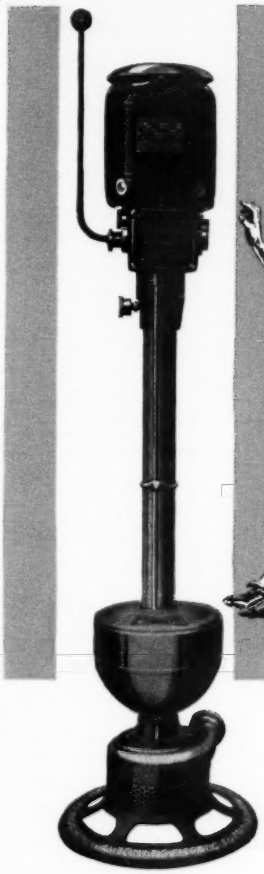
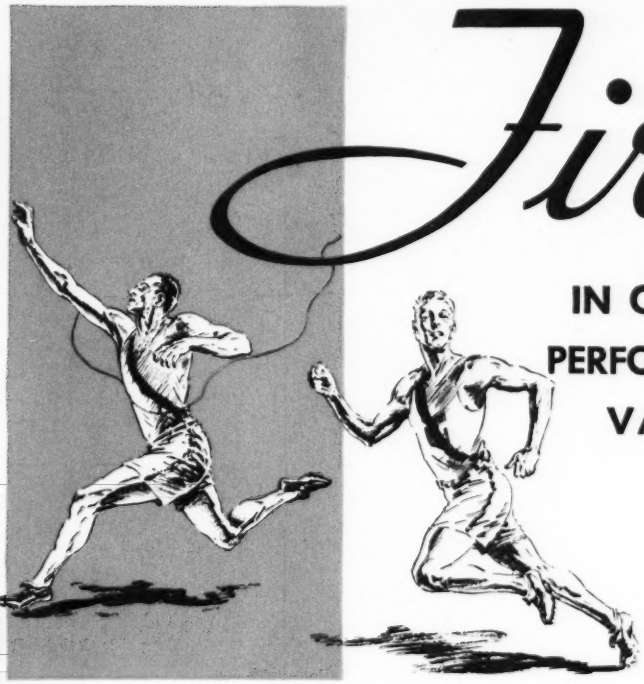


Fig. 1—Here is an actual work sheet. Note the various portions of the system are listed separately





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IN QUALITY PERFORMANCE VALUE

MODEL K
Made in 5 Sizes
Maximum Capacity
3600 Gals. per Hour
Retail Price
(Size No. 1K)
$65.00
F. O. B. DETROIT

THE plumbing contractor who installs a Penberthy Automatic Electric Sump Pump for the removal of seepage water knows that his customer is getting the best that money can buy—but at competitive prices. Penberthy Pumps are ruggedly constructed of copper and bronze throughout—they cannot rust. They are carried in stock for immediate delivery by jobbers everywhere.

YOU CANNOT INSTALL A BETTER SUMP PUMP

•

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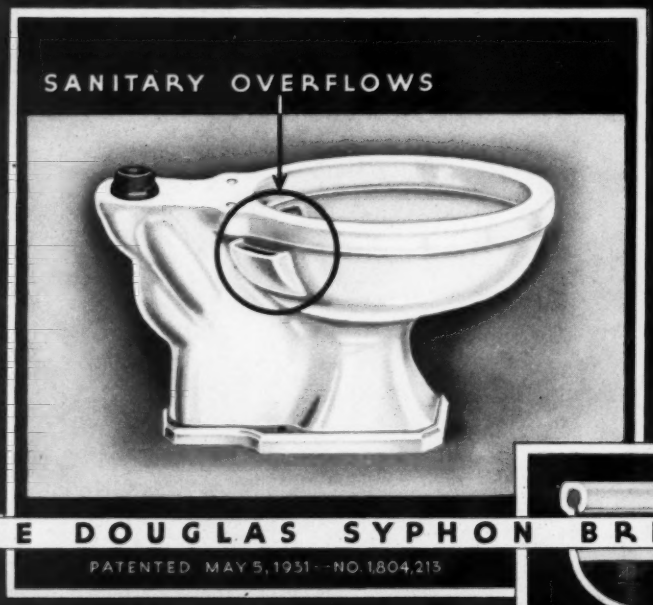
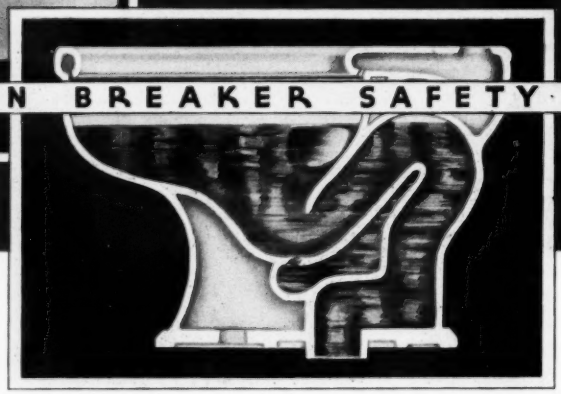
PENBERTHY SUMP PUMPS REMOVE SEEPAGE WATER





THE DOUGLAS SYPHON BREAKER SAFETY LINE

THE John Douglas Company did not foresee the Chicago epidemic. It did fore-see the underlying causes which could have brought such a disaster at any time.

Three years ago the DOUGLAS *Sanitary Overflow* Bowl was designed to provide a fool-proof, non-mechanical method of eliminating the health hazard of *back-siphonage.*

No epidemic hailed its coming . . . no disaster forced its recognition. But those with vision of what could and did happen in our crowded civilization acclaimed it a feature that *time* would make, a national requirement.

Time brought the Chicago epidemic . . . and that epidemic brought a nation-wide opportunity to the *Licensed Master Plumber*—the opportunity to give his support to a feature that now must be accorded full and rightful recognition.

The opportunity is greater because the *Licensed Master Plumber* is fully protected by our pledged policy . . . "to license only those manufacturers who agree that bowls with this patented DOUGLAS feature be sold *solely* through *Licensed Master Plumbers.*"

THE SYMBOL DOUGLAS OF SAFETY

Licensed Master Plumbers are invited to write for details of the DOUGLAS *Sanitary Overflow;* how it definitely eliminates cross connections and the DOUGLAS Plan of Protected Selling for the *Licensed Master Plumber.*

The JOHN DOUGLAS Company

Manufacturers of Plumbing Fixtures

CINCINNATI, O.

Amebic—

(Continued from Page 25)

"From the field investigations so far made, three important groups of structural sanitary hazards were found in two hotels. In order of increasing importance, they are tentatively listed as:

1. Old and generally defective water and sewerage piping layouts, potentially at least permitting back siphonage of a number of fixtures, such as bath tubs and toilets, into water lines.
2. Chance breaks in sanitary sewers or heavy overflows of mixed sanitary sewage and storm water drainage in the outside of the bosements.
3. Cross-connections of serious character between water and sewer lines or between water lines carrying potable water and water potentially subject to contamination.

He stated these three sanitary hazards sound like the productions of the handyman whose services are very cheap but frequently spread disease.

SMALL LINES CAUSE DROP

Space is too limited, he said, to go into the subject of cross-connections thoroughly. In faulty systems it is quite possible to siphon water or sewage from the fixture back into the water supply system, in case that system has a sufficient drop in pressure. A drop in pressure is very common where water supply lines are too small or pressures are insufficient.

Note carefully that this medical committee is now supporting what we have tried to include in plumbing codes for years. Please note their further cooperation which follows on subjects which we have been pushing for a long time.

"Recommendations Concerning Sanitary Engineering"

"1. Sanitary engineers have for years recommended, and the laws of practically every state and municipality provide, that water and sewer installations should be so arranged as to prevent absolutely contamination of water supplies for domestic use by water of nonpotable quality. The Committee recommends that attention be called again to this extraordinary hazard and the necessity of rigid enforcement of these regulations.

"2. There should be no provision for a connection or arrangement by which unsafe water or sewage may be discharged or drawn into a safe water supply system.

"3. An exhaustive and searching study of the whole water and sewage systems of hotels with antiquated plumbing should be made and any defects immediately corrected. This work should be done only by competent sanitary engineers.

"4. The present conditions under which, during periods of flood, flood waters from the street can reach and cause an overflow of sewage in the basements of any hotels should be thoroughly investigated by officials having jurisdiction, and methods adopted to prevent such an occurrence. Unless the antiquated plumbing and conditions of food handling found in hotels where the outbreaks occurred are remedied, there seems to be no warrant that a recurrence of the outbreak here considered may not develop under similar conditions. (What has just been said about these hotels, Prof. Cleverdon said, applies equally well to any other building in a similar condition.)

This committee was composed of nine medical doctors and one sanitary engineer whose names are:

Albert J. Chesley, M.D.
Charles F. Craig, M.D.
Morris Fishbein, M.D.
Ludvig Hektoen, M.D.
Thomas Byrd Magath, M.D.
George W. McCoy, M.D.
Henry E. Meleney, M.D.
F. W. O'Connor, F.R.C.S.
Milton Portis, M.D.
Abel Wolman, Sanitary Engineer.

The ameba is water-borne, can be transmitted by persons, is not contageous but is infectious, although not as infectious as the bacteria of water-borne diseases. It is impracticable to exterminate the ameba with chlorine as the dose required is so great that the water is rendered unfit for potable purposes and the cost would be prohibitive. It may be possible to kill the ameba with copper sulphate. For the reason that the amebae are about 25 times as large as the bacteria of water-borne diseases, either slow or rapid sand filtration is very effective in its removal. In order to incubate the ameba, a temperature of approximately blood heat, 98.6 deg. Fahr., is required. It is killed at about 105.8 deg. Fahr. or 40 deg. Fahr. This shows the ameba to be a very weak organism as compared with the bacteria of water-borne diseases.

QUESTION OF WATER SUPPLY

Considerable has been said about the great danger of an *amebiasis* epidemic taking place through water supplies which are not filtered. We have no proof that the Chicago epidemic was caused by the condition of the public supply, although it is indicated that the supply might have become contaminated locally by defective plumbing in at least two hotels and one factory. In an editorial in this same journal, the statement is made: "Now comes good evidence that from 3 to 5 percent of our entire population is infected." The danger in this latitude, where I am informed by Dr. Park that the infections amount to about one-tenth of one percent of the population, is very remote; but in some of the southern states where this percentage is about 8, the chances of an outbreak increase. Even under these conditions, epidemics do not materialize as they undoubtedly would if these infections were caused by water-borne disease bacteria rather than the amebae.

While I have no desire or intention, said Prof Cleverdon, to rush property owners to purchase filters and there is nothing in this paper which should cause them to do so, attention is, however, called to the additional safety we may enjoy due to having water filtered. Where public filters are not in service, private filters of a standard type may be installed by the master plumber. This does not mean a small glass filled with sand on a hose bib, but a good type of rapid sand filter.

While the effect of the amebiasis epidemic in Chicago, the reports, papers, etc., written on the subject do not lay any stress on the danger of other similar outbreaks, they do bring before the public very forcibly, and principally from the medical profession, the necessity for sanitary plumbing not only to protect the public from the ameba, but also from all types of water-borne diseases.

When you buy pipe, get ALL THESE ADVANTAGES

1 COMPLETE UNIFORMITY. Uniformity, in NATIONAL Pipe, means uniformity of metallic structure, of ductility, of strength, of resistance to corrosion. It also means uniformity of diameter, of wall-thickness, and of surface finish.

2 STRENGTH AND DUCTILITY. Strength and ductility to a remarkable degree are inherent in the steel of NATIONAL Pipe. Striking demonstrations of this have occurred again and again where the pipe was violently distorted by accident or was under abnormal stress in service.

3 THREADS EASILY. Smooth, strong, easily made threads are a marked advantage in using NATIONAL Pipe. This is due to unvarying quality of metal and to absence of slag inclusions, laminations, and blisters.

4 FLANGES READILY. Expanding and rolling back of the metal for flanging is a real test of any pipe. To do this without loss of material, time, or labor is an experience practical men appreciate.

5 COILS AND BENDS WELL. In making coils and bends, there is both satisfaction and profit in knowing that the pipe you use has an extra measure of strength and ductility to meet the demands of unusually close and exacting work.

6 SOUND JOINTS. Workmen in field and plant who have welded or coupled thousands upon thousands of joints on NATIONAL Pipe, enthusiastically endorse it as their choice.

7 COPPER-STEEL. To meet very definite needs in dealing with corrosion and thus to widen the range of service of NATIONAL Pipe, National Tube Company introduced Copper-Steel Pipe to the industry twenty years ago. Therefore, NATIONAL is the original Copper-Steel Pipe.

8 SCALE FREE. The NATIONAL Scale Free Process, invented and developed by National Tube Company, is a method by which all NATIONAL Pipe (butt-weld sizes ½ to 3-inch) is freed of mill-scale, inside and outside, leaving a clean, smooth surface.

9 SPELLERIZED. This is another NATIONAL process invented and developed by National Tube Company. Blooms for pipe, 4 inches and under, are subjected to a special roll-knobbling or hot-forging treatment which so works the surface metal as to eliminate any irregularities and to produce a uniform, dense surface.

10 TESTED AND INSPECTED. Tests and inspections, the most painstaking, most thorough and most conclusive that can be applied, are maintained throughout NATIONAL plants. The result is a product on which the user may fully and safely rely.

CHROMATE TREATMENT—All NATIONAL Galvanized Pipe is given a special chromate treatment to resist discoloration and the formation of white rust. This patented process preserves that smooth glistening surface or metallic lustre which is characteristic of good galvanizing.

NATIONAL TUBE COMPANY
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NATIONAL PIPE

QUESTIONS AND ANSWERS!

1—

1. *Reader believes that there will be unequal flow from tanks hooked up in method suggested in a former issue. He gives his ideas for the connections. An additional method, more simple than any yet discussed here is illustrated and described.*

2. *Rusty hot water is the complaint of one reader's customer. He wants to know if it is practical to heat the water in an indirect water heater with a coal burning water heater. This is another example of the necessity of circulation head for gravity flow and of the importance of blow-off valves.*

To the Editor:

In your January issue I noticed in the questions and answers section that you advised P. V. J. of N. Y. how to hook up two or more hot water tanks in series so they will give satisfaction.

Also P. V. J. says he has done the job accordingly and same works perfectly.

Now, I do not like to criticize, but I can't believe it works. The two or three tanks will probably heat evenly enough but you can't draw hot water from three tanks to fixtures. Or I'll miss my guess! For water, like everything else, takes the line of least resistance. Therefore all three tanks could be full of hot water and as you

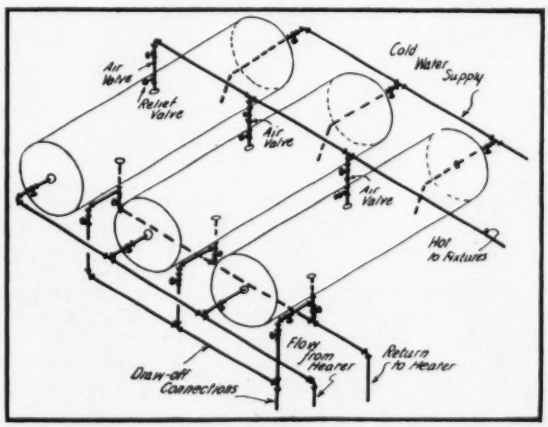


Fig. 1

start drawing hot water from fixtures you would empty the first tank and then start taking cold water from the same first tank, the other two tanks still lying full of hot but unobtainable water. Although you might get a little hot water diluted strongly from the first tank of now cold water.

I suggest that the tanks P. V. J. speaks of have never been called on for two-thirds, much less full capacity.

Your constant reader,

Bethany, Missouri. R. A.

P. S.—In the accompanying drawings, Figs. 2 and 3, are my ideas of a two and three tank hookup.

To the Reader:

The illustration to which our reader objects is shown herewith in Fig. 1 and it is apparent that the reader feels that the difference in the length of water travel between the tank closest to the fixture outlet, the middle tank and the tank farthest from the fixture outlet, is such that the entire flow in case of a heavy call for hot water will take place through the near tank and no flow at all will occur from the middle and farthest tank.

This assumption has some basis of plausibility owing to the length of water travel being slightly shorter

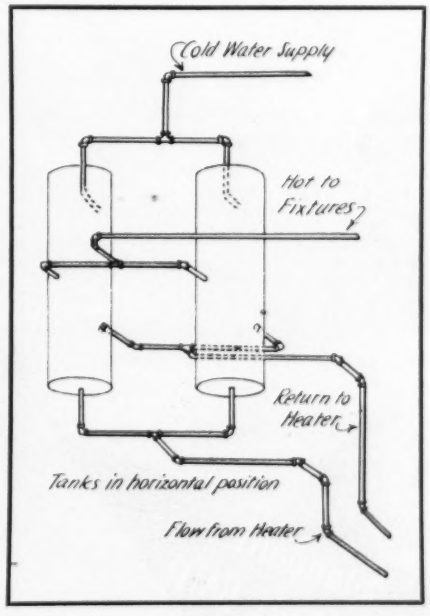


Fig. 2

through the nearest tank than it is through the middle and farthest tank; but it must not be forgotten that this difference will not be as much as our correspondent has

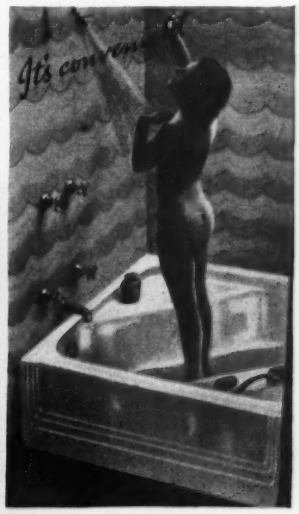
"Standard"
NEO-ANGLE BATH
$111.00 *
complete

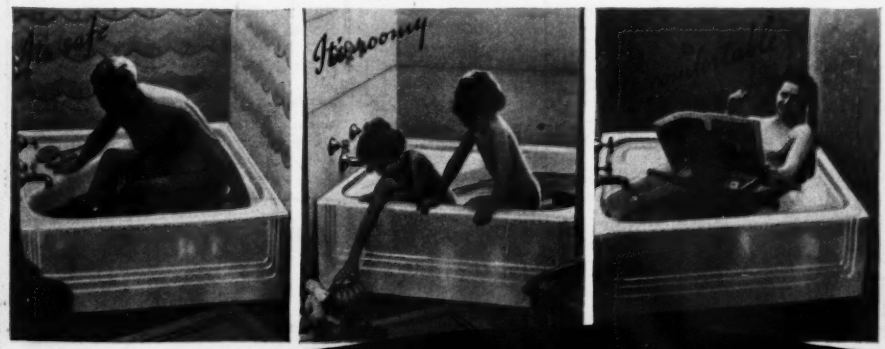
AT LAST AMERICA GETS A NEW BATH That's

IT'S here! The first major change in bath design in years—the "Standard" Neo-Angle Bath—so new . . . distinctive . . . different . . . it will revolutionize and modernize bathroom design. It's almost square—with the tub set diagonally to provide convenient, roomy seats in two opposite corners. It combines every type of bathing in a single one-piece fixture!

Never before have you had such an opportunity to create public interest in better bathroom fixtures. Soon the whole nation will be talking about this sensational new "Standard" Neo-Angle Bath, which can be obtained in white or any of ten colors. See it *now* at the nearest "Standard" showroom or at your own wholesale distributor. Write today for complete information and literature.

*Price includes bath in white regular enamel, complete with bath and shower fitting. Plus local delivery and installation by your registered master plumber. Pacific Coast Price $116.50.





Pat. No. 1,844,988

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Standard Sanitary Mfg. Co.

PITTSBURGH, PA.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

tried to picture owing to the fact that flow through tanks in *parallel*—and not in series as our reader has called them—is inversely proportional to the resistance so that if the resistance through the middle tank were twice as much as through the first tank and if the resistance in the last tank were three times as much as through the first tank, the resistances would be in relation the same as 1, 2, and 3 which would indicate that 3/6 of the water would come through the first tank, 1/3 of the water through the middle tank and 1/6 of the water from the last tank.

But there is nothing in Fig. 3 to indicate such an enormous difference in friction through the different tanks as the fittings, valves, etc., are identical and the only difference in the water travel is a few feet of straight pipe necessary to traverse in order to get to and from the middle and farthest tanks. This is so small an amount as to be, for all practical purposes, negligible. Still it cannot be said that theoretically it does not exist because there is no doubt but that a longer run will have a tendency to cause the water to short circuit. So our correspondent is theoretically correct in saying that there would be some tendency to favor the flow from the nearest tank.

Now let the manner of counteracting this as suggested by our reader in Figs. 2 and 3 be considered. Inspection of these illustrations shows that, while he has succeeded

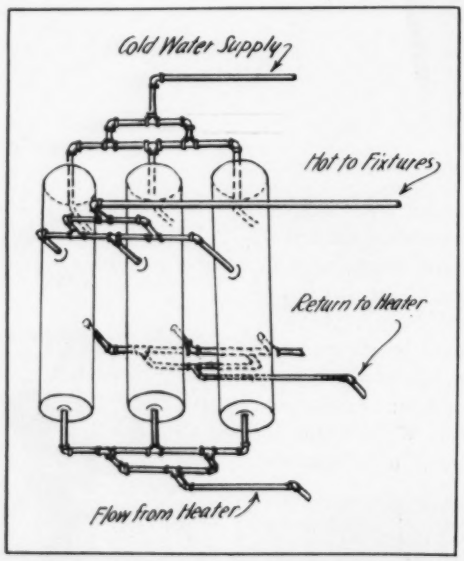

Fig. 3

in balancing the length of run and therefore the resistance through the two or three tanks in a theoretically perfect manner, he only has done so by materially adding to the resistance of all. For example, in Fig. 1 the water passes through one 90 degree turn between the tank and the main line this occurring where the water enters the main; the same thing happens on the return connection. But in Fig. 2 for two tanks our correspondent has introduced at least six 90 degree turns—or three times as many materially adding to his resistance to circulation; in Fig. 3 he has used at least ten 90 degree turns (five on the supply and five more on the circulation line) as against two 90 degree turns shown on Fig. 1, or five times as many.

As the resistance of a 90 degree turn is between 5 ft., and 10 ft., of straight pipe he has added the equivalent on the three tanks of between 50 ft., and 100 ft., of

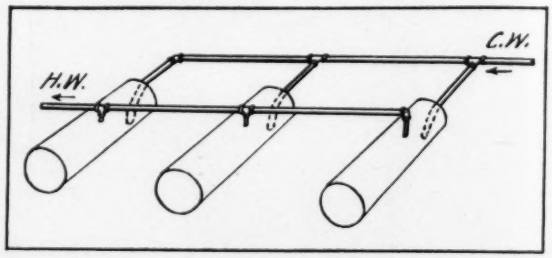

Fig. 4

straight pipe as far as friction is concerned. Incidentally his is a much more expensive installation involving more pipe, more fittings and a correspondingly greater amount of labor. There is a much more simple solution than the one offered if anyone is desirous of exactly balancing the drawoff and that is by simply reversing the direction of either the supply main or the cold water main as shown in Fig. 4 which automatically will equalize the friction exactly in all tanks; this, however, will be found to be unnecessary in the ordinary job.

2—

To the Editor:

I have a customer who has trouble with rusty hot water, the enclosed sketch, Fig. 5, shows the present hookup. He proposes that I change the piping so that the coal heater will heat the indirect heater as shown on

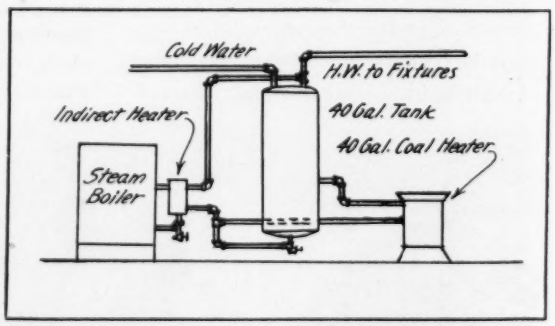

Fig. 5

sketch, Fig. 6, in summer. His object is to eliminate the water from the coal heater going through the hot water tank.

I think this change will be too expensive to operate as he will have to heat all the water in the steam boiler all

America's cities—SLOAN equipped

PHOTO BY FAIRCHILD AERIAL SURVEYS, INC.

WASHINGTON, D. C.

Prominent SLOAN Flush Valve Installations

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10. Hecht Department Store
11. Evening Star Bldg.
12. Internal Revenue Bldg.
13. National Museum
14. Smithsonian Institute
15. Dept. of Agriculture
16. Bureau of Engraving & Ptg.
17. Dept. of Commerce
18. District Building
19. U. S. Farm Bureau
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22. Chesapeake&PotomacTel.Co.
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25. Annapolis Hotel
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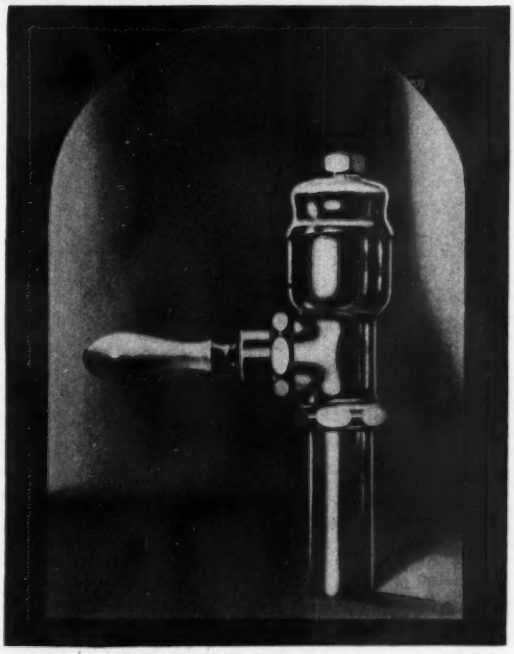
27. Garfinkle Dept. Store
28. Bond Building
29. Southern Railway Bldg.
30. Washington Bldg.
31. Treasury Building
32. White House
33. Lafayette Hotel
34. U. S. Veterans Admin.
35. Shoreham Building
36. Investment Building
37. Edmunds Building
38. State, War & Navy Bldg.
39. Army & Navy Hotel
40. Daughters of Am. Rev.
41. American Red Cross
42. Constitution Hall
43. Reconstruction Finance Corp.
44. Department of Interior
45. Park Lane Hotel
46. Powhatan Hotel
47. 1726 I St. Medical Bldg.
48. Park Central Hotel
49. Francis Scott Key Apts.
50. All States Hotel



SLOAN VALVE CO » CHICAGO

summer resulting in a waste of coal.

Will you kindly give me your opinion of this job?

Pa. L. P.

TO THE READER:

In the first place, it is quite likely that there is a condition about your water which makes it particularly corrosive and which causes rust to form in the coal heater.

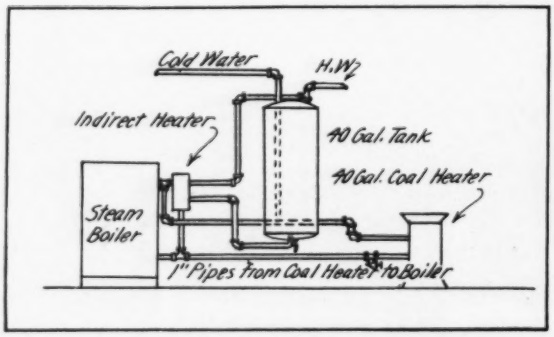


Fig. 6

There is another condition about your present arrangement which is also conducive to rusty water and that is there are no direct provisions for blowing down the coal heater.

Still another feature about your present installation which aggravates the situation is that your hot water flow line between the coal heater and the range boiler enters the storage tank at a low point. It should enter either at

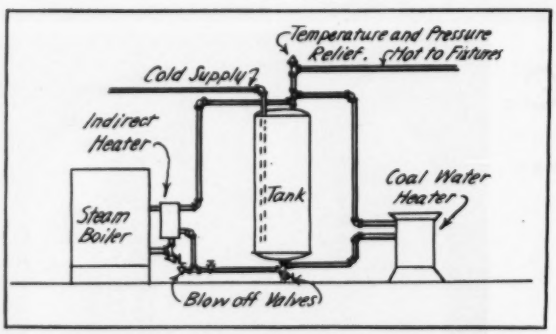


Fig. 7

a side tapping at the top of the tank or at the hot water connection in the head of the tank. With an elevated connection, the circulation is more rapid and the water in the heater is not so likely to reach the high temperature customary with sluggish circulation.

Our suggested connections are shown on the accompanying sketch. You will note that the coal water heater and the indirect heater on the steam boiler have individual connections. It would be best if one of these heaters is connected into a side tapping at the top of the tank if such a tapping exists. With independent connections, there is little possibility of by-passing the storage tank.

You will note that although an unusual number of valves are shown, they provide for separate blowing down of each unit. In other words, the coal heater can be flushed out positively; the range boiler can be flushed out and the indirect heater can be flushed.

Unless there is some condition about this job of which we have no knowledge, we are quite sure that the suggested changes will eliminate the difficulty experienced by your customer.

Questions For READERS

The following question was asked in the March issue, and the following answer is by a reader:

What are some effective ways to determine in your prospect's home or place of business, if he needs humidification?

We could not refrain from replying to the question given on page 54 of your March issue, asking about ways of determining if a prospect needs humidification. Having made some study of this from a practical standpoint perhaps the following may be of interest to your readers:

The only sure way to determine whether or not humidification is needed is to test out the actual humidity conditions on a day which is at least freezing, or pretty close to it, with a sling psychrometer.

The ordinary wet and dry bulb is useless unless the wick is absolutely clean and unless a fan is placed in front of it so that a current of air will pass over the elements. If this is done satisfactory results can be obtained from the wet and dry bulb indicator.

Becoming even more practical than that a prospect would need humidification if the joints on his chairs or furniture became loose, or if the doors shrank, or if any plant in the house became abnormally dry. An almost sure indication of the necessity of humidification is if static can be developed by shuffling across a rug in the room and touching another person or a metal object. From casual observation this static does not appear if the relative humidity is over 25 per cent, and certainly everyone will agree that with humidity under 25 per cent, humidification is necessary.

How Would You Answer This Question?

Here is a question for readers suggested by a reader. "What will be the cast iron boiler size to use under the following conditions: 1053 lineal feet of 3½-in. cast iron pipe laid in a horizontal position, one row deep, under the greenhouse beds, is used to heat a greenhouse to a temperature of 55 deg. Fahr. The average temperature of the water in the piping will be 140 deg. Fahr. Hot water is the heating medium and it is desired to select a cast iron boiler of ample capacity to do the work. It is assumed that the figure for the length of pipe is adequate to take care of the greenhouse heating load.

Answers based upon your experience, suitable, will be paid for and published in the July issue.

DOMESTIC ENGINEERING

Automatic Heat *and* Air Conditioning Section

OUR INDUSTRY BRINGS HOME COMFORT

MAY, 1934

NOW YOU CAN SELL STYLE AND BEAUTY AS WELL AS EFFICIENCY

WHAT sells automobiles today? Performance plus *new beauty*. Why does every home owner want a modern bathroom? For the *beauty* of colored fixtures. Now — *new style and beauty* will help you sell the De Luxe Model Ideal Redflash Boiler.

Opportunities for replacement are greatly increased because the De Luxe Redflash for solid fuel will make thousands of home owners realize that their present boilers are out of date. Its handsome exterior will stop people at your display window... bring them in to examine it. Then the name and reputation help to close the sale. Write today to your jobber for all the details.

THE NEW DE LUXE MODEL IDEAL REDFLASH BOILER

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THOROUGHLY INSULATED. The handsome jacket of the De Luxe Redflash not only adds to its beauty but to its efficiency as well. It insulates the boiler so well that children can play around it without danger of burns.

●

SEE THE INSIDE. Open the outer door of the De Luxe Redflash and show your customers the scientific design and sturdy construction that have made the Redflash line famous. Beauty outside, efficiency inside--that's the story!

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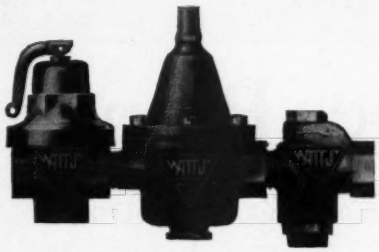
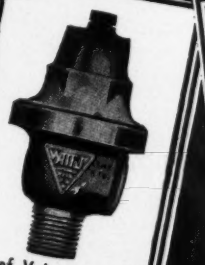
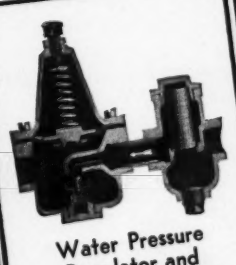


House Heating Unit, Type 38
also Watts Tank Systems

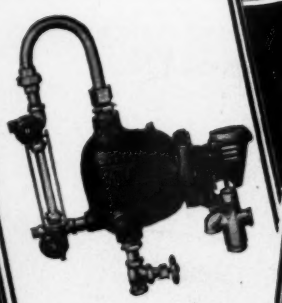


Relief Valve No. 30



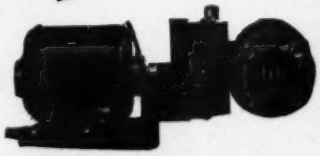
Water Pressure Regulator and Strainer Type 23-S

ONE GUARANTEE -
ONE SERVICE -
ONE 58 YEAR OLD FIRM
BACK OF EVERY
WATTS SPECIALTY



Safety Feeder
Type 60

Autotherm
Relief Valve
Type 40



Water Circulator, Type 147

You'll Have no "Come-backs" with Watts Plumbing and Heating Specialties

Selling goods is only half the story. Selling goods that stay sold and do not involve you in any "come-backs" or kicks is the other half—and it is the most important half, because it is the half upon which you must depend for building a permanent business in your other lines as well.

If you install specialties that fall down on the job, it gets you in wrong with the architect as well as the owner.

Watts Specialties invariably "deliver the goods." They make friends and keep them.

For 60 years the name "Watts" has stood for *guaranteed satisfaction.* Their great success has brought a horde of imitations and substitutes. But no other manufacturer is qualified by experience, by resources and by equipment to duplicate the Watts.

Remember, we back you to the limit when you install Watts Products.

Write for Catalog, or mail the coupon.

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WATTS REGULATOR CO.
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Makers of Water and Steam Regulating Devices Since 1874

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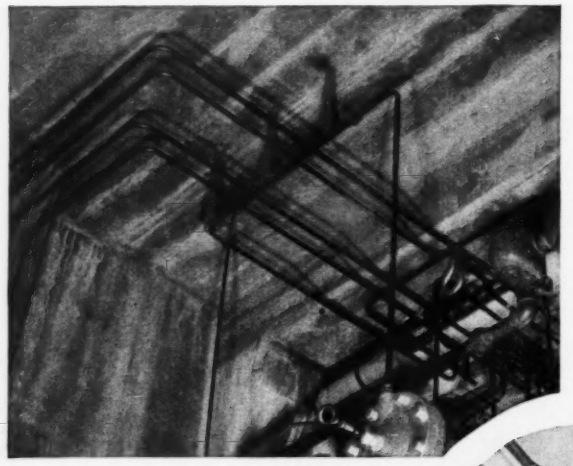
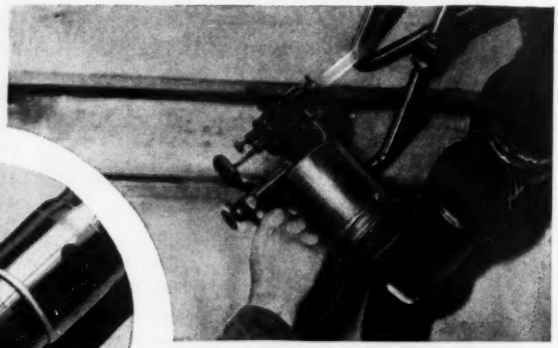
The Revere Crier



Sales Point

Here's a little point that may help build big sales on Revere Copper Water Tube (Type K) for you. Remind your customers of the severe cold we suffered this past Winter. Point out that Revere Copper Water Tube exhibits unusual ductility under extreme heat and cold. It has withstood 10 to 12 successive freezings without bursting . . . frozen Revere Copper Water Tube has been successfully thawed with a blow-torch!



Saved

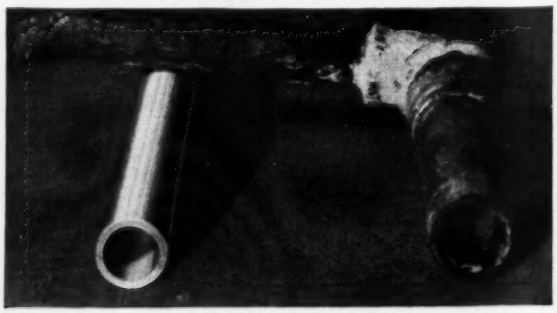
600 fittings . . . that's what Revere Copper Water Tube (Type K) did on this job at the Erie Filtration Plant, Erie, Pa. Revere Copper Water Tube, *hard temper*, is the copper pipe that's both *rigid* enough to give long, sagless runs . . . and *flexible* enough to be quickly and accurately bent with an inexpensive, hand-operated tool!

Seeing

is believing! . . . here's a 20-year-*old* piece of rustable pipe as removed from a New York apartment, and a 30-year-*young* piece of Revere Brass Pipe. Note the difference. Note how the former has rusted and become clogged. Yet the Revere Brass Pipe is still in perfect condition. Use this "horrible example" method to sell your customers on the proven economy of Revere Brass Pipe.

Streamline

This fitting, especially designed for copper tube, eliminates threading. It is characterized by a smooth, uninterrupted surface *inside*, and a proved method of sealing *outside*. The Streamline fitting is sealed with *solder* fed through a hole in the fitting and melted with a blow torch. Capillary attraction distributes the solder throughout the fitting's length. You can see it in a bright ring at each end . . . visual proof of a perfect seal. This is a job requiring a craftsman's tools and a craftsman's skill.



Say REVERE when you need Copper · Brass · Bronze

Revere Copper *and* Brass

INCORPORATED

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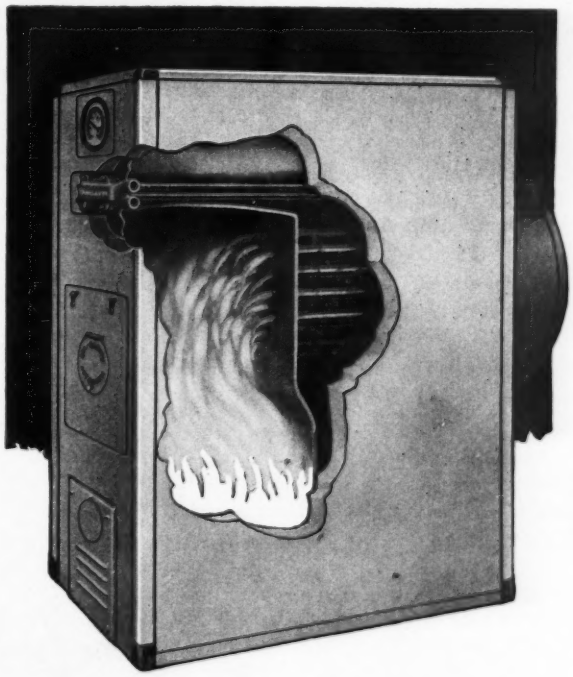
They said it couldn't be done

• • • A wooden building, set on piers on a river bank, *exposed on all four sides and top and bottom* to the bitter winds and low temperatures of a Maine winter . . . they said it couldn't be heated efficiently . . .

but the FITZGIBBONS OIL-EIGHTY AUTOMATIC did it -- and saved money

This American Legion Home in Augusta, Maine, is a steam heating job of 1500 sq. ft. radiation. The enterprising heating contractors, Turner & Hussey, Inc., of Augusta, Maine, pinned their faith on the OIL-EIGHTY AUTOMATIC, installed one, and demonstrated that only $155 was needed of the $250 appropriation for the season's fuel oil.



The OIL-EIGHTY AUTOMATIC is a steel boiler that goes all the way to enable any good oil burner to do a real heating job. In every characteristic, in every dimension, it is designed to take all the heat liberated by the burner and put it to work. Combustion area is *right*—heat transfer is exceptionally rapid. And, in addition, for domestic use, this boiler can give, summer and winter, the valuable service of

INSTANT HOT WATER without a storage tank

WRITE FOR BULLETIN D

and get full details of this perfect team-mate for any good oil burner.

Fitzgibbons Boiler Company, Inc.

GENERAL OFFICES: 570 SEVENTH AVE., NEW YORK, N. Y.
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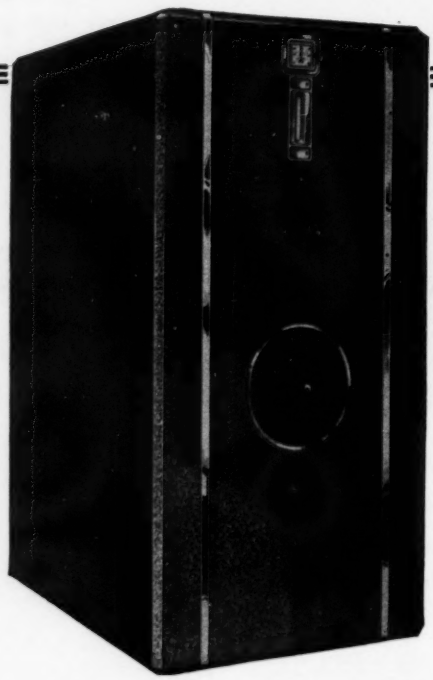
BRANCHES AND REPRESENTATIVES IN PRINCIPAL CITIES

Fitzgibbons
OIL-EIGHTY AUTOMATIC

A LIE that's the TRUTH About This *New* OIL BURNING UNIT



ISN'T it so, that every concern that has an Oil Burning Boiler these days, is shouting at the top of his voice that it's the best? He does it in all sincerity.

But isn't it so, that each of them is equipped with its own particular make of oil burner? That means, if for one reason or another (or no particular reason at all) you or your customer, prefer some other burner, you are sort of out of luck about that boiler.

That's exactly why Burnham *built everything into its oil burning boiler except* the burner. But it did make the boiler so any of the best makes of pressure burners fits it like a hand does a glove. (Boilers for Rotary Burners will be available later.) You can have one of the best oil burning boilers, plus the burner you like best. Have everything inside. Nothing sticking outside.

So when we say to you that the Built-In Burnham is your one best buy, it is not a lot of advertising "hooey," but the honest to goodness truth.

Send for full particulars. Find out the half-dozen sure enough advantages of this Built-In Burnham.

Burnham Boiler Corporation

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Representatives in all Principal Cities of the United States and Canada

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Send me full facts on the new Burnham Oil Burning Unit Boiler.

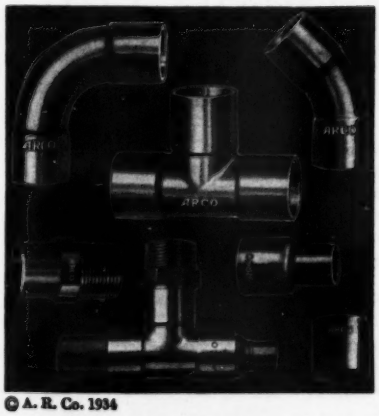
Name .....

Address .....

HERE IT IS—AN INTEGRAL TEE OF 99.9% PURE COPPER!

Shown above are three sizes of the New *ARCO* Integral Copper Tee—the last word in Copper Fitting advancement. (Left to right) ¾" by ⅜" tee, ¾" by ½" tee and ¾" by ¾" tee.

Patent Number 1850049—Others Pending



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AGAIN ARCO Engineers have produced the impossible! The ARCO Integral Tee is a reality! Another step to complete the advances being made for an all-copper installation! ARCO Copper Threaded Elbows with other Arco Fittings now give you the advantages of the latest in copper *precision-made* Fittings.

ARCO Full-Flow Wrought Copper Fittings and ARCO Copper Pipe produced by our own patented wrought metal process, assures uniformity of contour and wall thickness, perfect fit and workmanship. Take full advantage of this newest departure in Integral Copper Tees by using them on your next installation.

Distributed by leading jobbers everywhere. Ask your jobber for prices and literature or write direct.

Copper Pipe and Fitting Division

AMERICAN RADIATOR COMPANY

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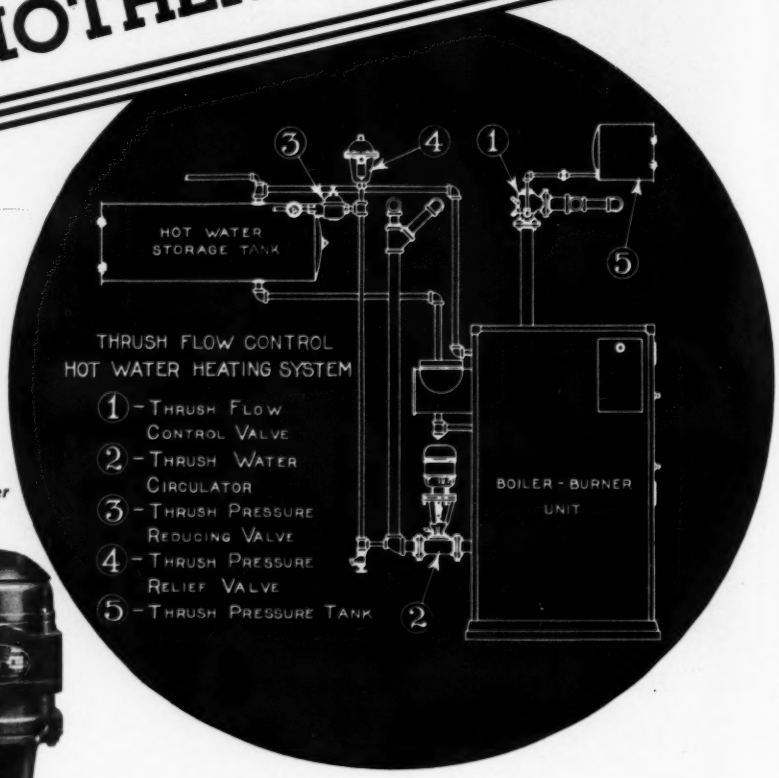
ARCO FULL-FLOW WROUGHT COPPER

EVERY INSTALLATION SELLS ANOTHER ONE FOR YOU!


HOT WATER STORAGE TANK
BOILER - BURNER UNIT
THRUSH FLOW CONTROL HOT WATER HEATING SYSTEM
1 - THRUSH FLOW CONTROL VALVE
2 - THRUSH WATER CIRCULATOR
3 - THRUSH PRESSURE REDUCING VALVE
4 - THRUSH PRESSURE RELIEF VALVE
5 - THRUSH PRESSURE TANK

Letters from users

Crane Company Salesman, Escanaba, Michigan, writes — "The Thrush Circulator that Moersch & Degnan bought two weeks ago is now operating at the Delta Hotel — and how! The water is steaming from every faucet in every part of the Hotel. Burns is the most satisfied customer I have ever seen for he spent the price of three Circulators trying to remedy the situation before we recommended the Thrush Circulator."

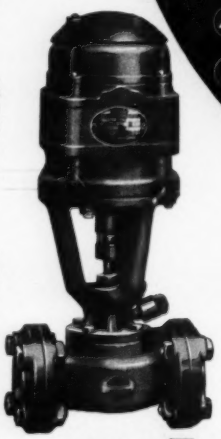
Clark Oil Burner Sales & Service, Kalispell, Montana, writes — "Mr. James Conlon's new Thrush System and Circulator is doing wonderful work. It appears that it will make a saving of approximately 60% in fuel as the burner is now only on 30 minutes, whereas it used to be on for as much as three hours."

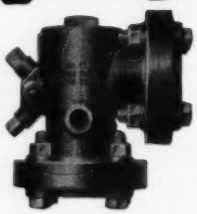
W. F. Schwartz, Baltimore, Md., writes — "Please send me pamphlets on the Thrush Control System. I have installed one system and it is so very satisfactory that many people ask about it, so that some of the folders would be handy."

Dewey otzien, Chicago, Illinois, writes — "I have been watching one of your Circulators in action and find it gives great satisfaction. I am in charge of a 48 flat apartment building and we need one of these Circulators to make the water circulate at the farthest point from the heat, which is 220 ft."

THEY TELL THEIR NEIGHBORS ABOUT IT!

Thrush Water Circulator





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THRUSH FLOW CONTROL SYSTEM ASSURES OIL BURNER EFFICIENCY

IT PAYS to sell equipment which pleases users so much *they go out and make other sales for you!* Read the letters at the left and you will decide to push Thrush Flow Control Heating System. It assures utmost operating efficiency on automatic fired Hot Water Heating Plants, and *permits their year around operation* for Domestic Hot Water Supply with fully automatic control in summer or winter.

On Thrush equipped jobs *a reservoir of intensely hot water is available for instant distribution* throughout the heating system when heat is needed, but there is no circulation when heat is not required. This reduces fuel consumption, prevents overheating, and assures a really hot Domestic Hot Water supply. *Use the coupon to ask for our new booklet.*

MAIL THIS COUPON!

H. A. Thrush & Co., Box 459, Peru, Ind. Please send booklet describing Thrush Flow Control Heating System and its advantages for use with automatic firing devices.

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Address .....

City .....

State .....

H. A. THRUSH & CO.
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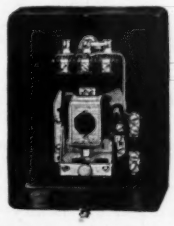
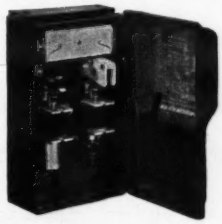
Bulletin 209 Starter



D. C. Across-the-Line

For motors up to 1 H.P., 115 V.-230 V. An ideal automatic starter for small D. C. motors. Has overload relay.

Bulletin 265 Starter



D. C. Resistance Starter

For motors up to 10 H.P., 115 V.-20 H.P., 230 V.-550 V. An ideal automatic resistance starter for D. C. motors.

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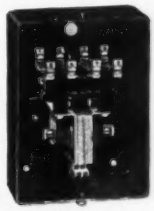


For A. C. & D. C. Service

For 6, 12, 24, 110, and 220 volts A.C. & D.C. circuits and for non-inductive loads up to 5, 10, 15, and 30 amperes.

A-B Allen-Bradley

The Mark of Modern Control is the A-B Trademark. Many leading oil burners, refrigerators, and other domestic appliances are Allen-Bradley equipped. Follow this example and use Allen-Bradley Controls on your next job! Send for data.

Manual and Automatic Starters for A. C. & D. C. Motors

The Allen-Bradley Line solves the starter problems of oil burner, refrigeration, and air-conditioning contractors, because there is an Allen-Bradley Starter for every type of service! Whether you need starters for alternating current or direct current motors, you will find a standard Allen-Bradley Starter exactly suited for the job.

Starters are available in pressed steel, water-proof, and explosion-proof cabinets, and many other types of enclosures. This wide variety of control devices is an important advantage to all manufacturers, contractors, and dealers. The Allen-Bradley catalog is a valuable reference on any control problem. Send for your copy today.

ALLEN-BRADLEY CO.
1317 S. First Street, Milwaukee, Wisconsin

Bulletin 609 Starter

A. C. Manual Starter

For single and polyphase A.C. motors. Max. polyphase ratings 3 H.P., 110 V., 5 H.P., 220 V., and 7½ H.P., 440-550 V. Gives overload protection.

Bulletin 709SP Starter

A.C. Single Phase Automatic

A handy starter for single phase motors up to 1½ H.P., 110 V., 3 H.P., 220 V. Can be used interchangeably on either voltage. Gives overload protection.

Bulletin 709 Starter

A. C. Polyphase Automatic

For push button or pilot automatic control up to 3 H.P., 110 V., 5 H.P., 220 V., 7½ H.P., 440-550 V. Relays provide accurate overload protection.

★OIL BURNER HEATING★

a brand new book containing information every man should know about oil burner heating

OIL BURNER HEATING discusses ways and means of overcoming difficulties from the sale of the job to the operating installation. Testing problems worked out show what should be done to test efficiency of installations, how to compare cost of oil or gas heating with coal, how to find heat losses, how combustion chambers are built, what to do when changing from gas installation to oil burner, how to figure oil consumption for year (a chart illustrates method), a practical example for testing heating installations, how to make bleeder connections when the headroom is low. All of these and many other problems are explained and illustrated with diagrams and charts, so that the book can be used by you on practically any oil burner installation.

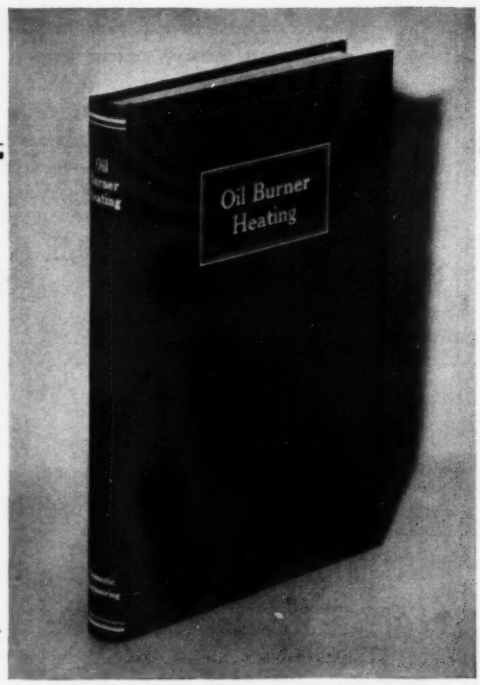
For instance, in the first chapter of the book "HOW TO FIGURE COST OF HEATING WITH EITHER OIL, GAS OR COAL" is a comprehensive detailed description of fuel cost comparison which is the actual experience of a dealer who was called upon by a prospective oil burner buyer to explain the difference in cost, operating with each of these fuels. This chapter alone, with its valuable table on fuel costs will be worth many times the cost of the entire book.

The Table of Contents gives you an idea of how thoroughly this book goes into its subject—how it takes oil burner heating with its many problems and difficulties and breaks it down into simple, understandable information which will be of assistance to everyone interested in oil burner heating.

This book is brand new, just off the press, and has been compiled because each and every chapter in the book is the result of questions received from readers of DOMESTIC ENGINEERING who have had oil burner heating problems to solve.

It will be to your advantage to get a copy of OIL BURNER HEATING—go through its pages and find for yourself why we say it is the most important book yet published on the subject it covers. Hundreds of men everywhere are going to use this book because in its pages is information which other men have spent years to learn—actual working examples, no theory, just plain facts.

This new 184-page book made its appearance March 1st. Before a month had passed 1,000 copies had been sold and hundreds of owners had written us commenting on the help they are getting from it. A new supply is now available and has been reasonably priced at one dollar. Send your order today. If it is not all we claim, your money will be cheerfully refunded. Fill in the coupon below, pin your check for $1.00 to it and mail today.



CAN YOU ANSWER THESE QUESTIONS?

What will the use of oil fuel cost in comparison with coal and gas?
Which oil is best to use?
What percent CO_2 can be reached in oil burning?
How do you figure oil consumption for year?
What is involved in question of oil burner efficiency?
What equipment do you use to test oil burner?
What is a direct heating surface in a boiler?
What is indirect heating surface in a boiler?
At what rate of output of boiler do you find maximum efficiency?
How do you find heat losses?
How are combustion chambers built?
How to change condition in underheated room?
How do you test all year operation of a heating plant in moderate weather?
How do you know if air supply is correct?

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Bleeder Connections When the Headroom Is Low.
A Trouble Job Is Solved.
How to Clean a Boiler.
What Is the Hartford Loop?
How to Calculate Seasonal Heating Costs.
How to Figure Radiation Without Tables.

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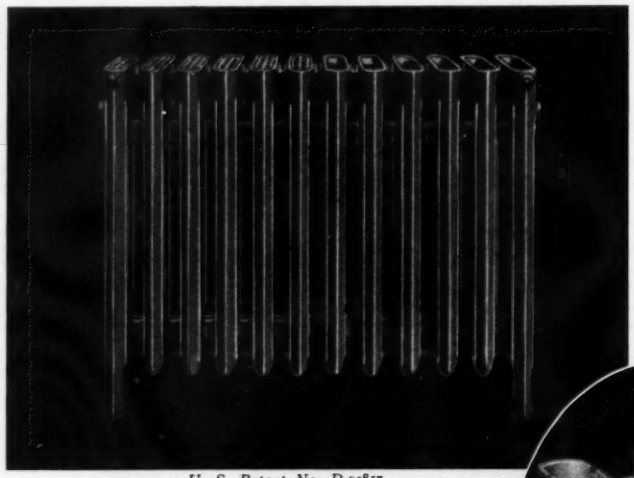
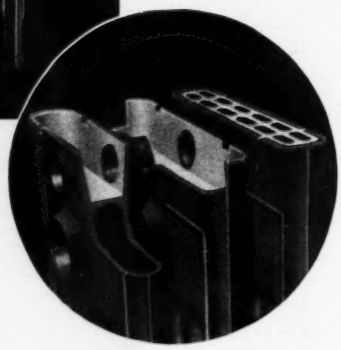


Below is a detailed view of the HUMID-HEET Radiator, showing large, connected, porcelain enameled water chambers covered with removable porcelain grilles. It operates automatically and is easily cleaned.

U. S. Patent No. D-91857



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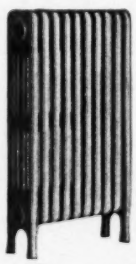
The Utica Radiator Corporation helps its dealers sell the public. Above is a small reproduction of a half-page advertisement in The House Beautiful. The Utica Finance Plan enables you to offer easy monthly terms.

Something with which you can create new customers and profitable business. The HUMID-HEET Humidifying Radiator is simple and inexpensive—yet highly efficient. It operates automatically. Two of these radiators are sufficient for the average size home and they do not cost much more than ordinary radiators. HUMID-HEET can be sold for either new or replacement work. It will pay you to investigate.

MIDGETS Save Space



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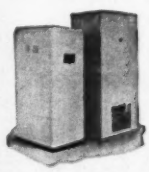

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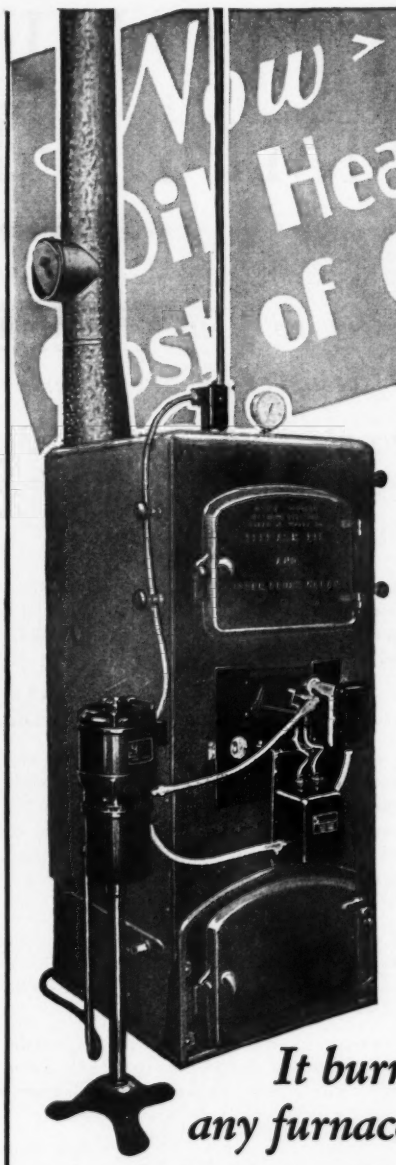

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Low Fuel Cost — Low Operating Cost... Here is the S-N "Junior" — the burner for everybody! Its first cost is far below that of conventional burners. Its operating cost compares with soft coal heating!

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The S-N "Junior" is now ready for the market. We invite you to join us in selling it — even though you continue to also sell your present line. **(Write Today for Full Particulars)**

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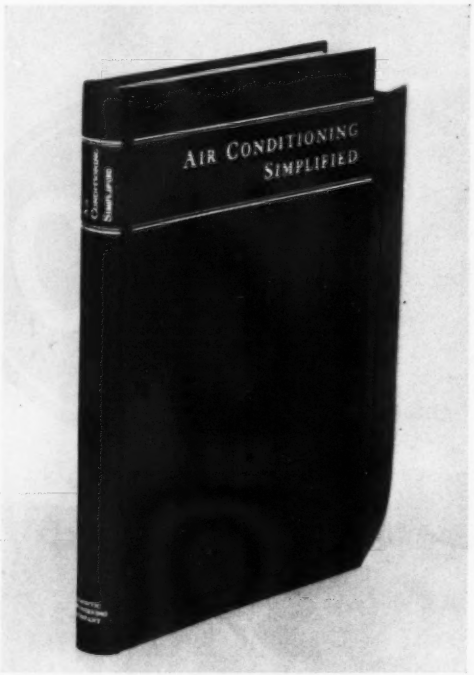
AIR CONDITIONING SIMPLIFIED



★

A brand new book containing information every man should know about air conditioning.

★

AIR CONDITIONING SIMPLIFIED, as its name implies, is a simple, easily understood book that takes the mystery out of air conditioning—it tells what it is—how it works—how it is installed —and how it is sold!

This new book, off the press April 10th, has back of it three years of planning and preparation. It is divided into three main parts.

The first part, covering the theory of air conditioning, gives a simple but thorough explanation of the mechanical end of an air conditioning system. It contains facts from the pens of the best authorities in the country—men like Samuel R. Lewis, Walter L. Fleisher, A. M. Daniels and over fifteen others. It has all been compiled and edited by the well known heating authority, Harold A. Alt.

Part two describes in detail a number of actual installations, including floor plans, working drawings, detailed drawings of equipment, etc. There is no theory here—just plain examples of what has been done, the cost, etc.

The answer to the question "Can Air Conditioning Be Sold?" is well illustrated in the third part. Here you see just how air conditioning is being sold. Other contractors are selling it and here you will find out how they go about it.

We recommend this book with the utmost confidence that it will give you an entirely new slant on air conditioning. Go through its pages. Find out for yourself why we recommend it as the best book to meet the needs of the air conditioning industry of today.

The book, for the time being, is priced exceptionally low at $1.00. This $1.00 is based on "depression" priced printing, paper and binding. But now "depression" is over. Paper, printing, engraving and binding have skyrocketed, sending costs high in the air. When the first edition is exhausted the price of $1.00 will undoubtedly have to be raised.

So fill in the coupon below. Pin your check for $1.00 to it and mail it today. Money back if you are not completely satisfied.

CAN YOU ANSWER THESE QUESTIONS?

In figuring cooling, how much radiant energy from the summer is absorbed by window glass?
To what extent will awnings reduce the cooling load for a home?
How can the cost of cooling be figured on the degree-day basis?
How can a home be dehumidified and cooled using gas heat?
How much does it cost to air condition a home in both summer and winter?
How should you go about cooling a residence using ice?
Do you know how to design ducts for air conditioning?
How can Noise be eliminated?
What is steam jet refrigeration for air conditioning?

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By making this identification service available, Frigidaire is helping its Air Conditioning dealers increase sales and is enabling them to cash in on its national advertising.

Frigidaire dealers—take advantage of this opportunity NOW! Make certain that you get the most sales from Frigidaire's Air Conditioning advertising campaign.

Frigidaire has arranged to insert its trade mark (and short text) in the classified telephone book. Below this you, as an authorized dealer, list your name, address and telephone number. Then prospects who read Frigidaire's advertising look for the trade mark in the 'yellow pages' and are directed to your store.

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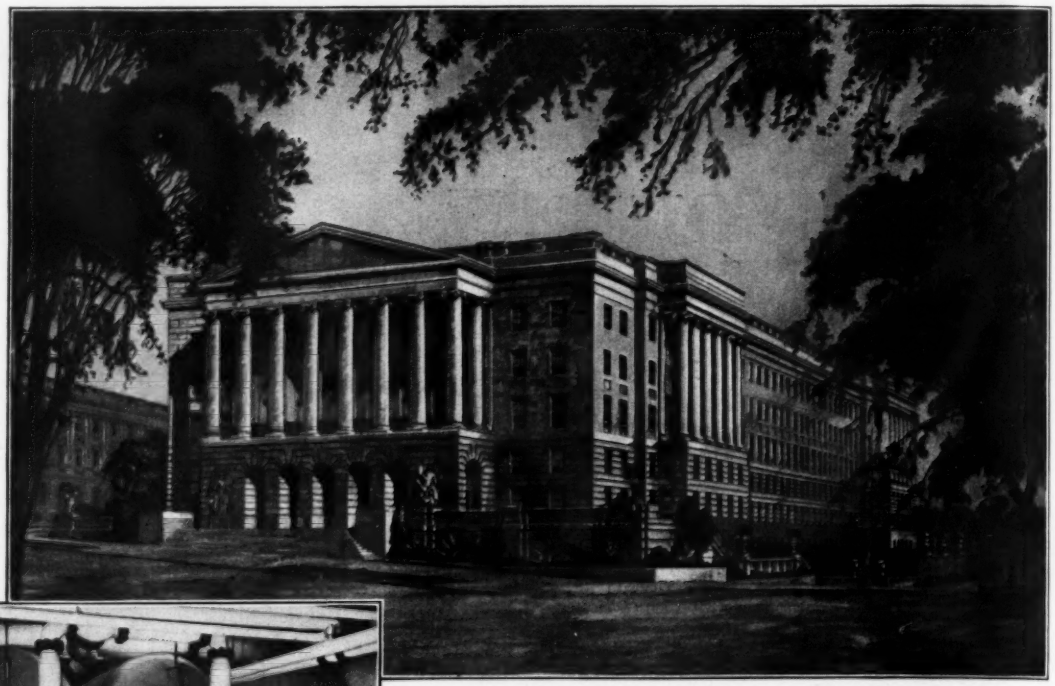
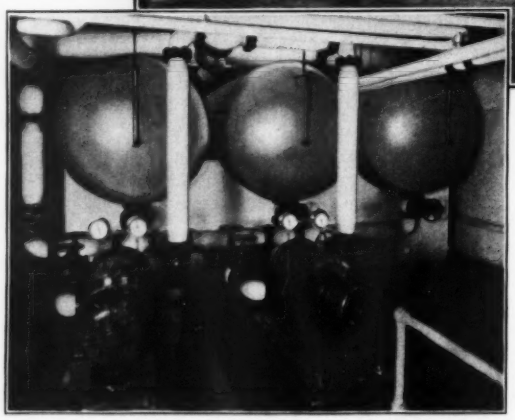
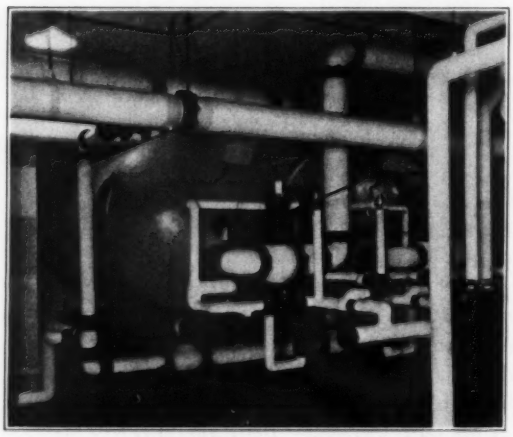
Many other manufacturers provide this identification service. Cash in on their sales building advertising! List your name under the trade marks of the brands you sell. In the case of most manufacturers, you pay only for your *own* listing—just a few cents a day.

Ask your local Directory Representative for full information about "Where to Buy It" Service—also about other profitable types of listings available in the Classified.





Battery of three Gerstein & Cooper, Hydro-pneumatic, all copper tanks, 2500 gallons each, as installed in new House of Representatives Office Building, Washington, D. C.



Illustrating the two Gerstein & Cooper, all copper, Storage Heaters, 1750 gallons each, installed in the above office building.

HOUSE OF REPRESENTATIVES—NEW OFFICE BUILDING, WASHINGTON, D. C.

David Lynn, Architect of the Capitol. The Allied Architects of Washington, D. C., Inc., Consulting Architects.

Lloyd E. Mitchell, Inc., Baltimore, Md., Heating & Plumbing Contractors

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Gerstein & Cooper Tanks and Storage Heaters

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The frequency with which G & C all Copper Storage Tanks, Storage Heaters, Coolers or other copper units are specified for installation in outstanding buildings throughout the country is most significant, and leads to but one conclusion; G & C products "must be right."

G & C products, backed by years of experience and a corps of highly skilled artisans are "right." They are engineered to very definite standards of modern tank construction, both inside and out, to give more than the expected years of service. It is this most careful attention to details of materials and construction that marks the superiority of Gerstein & Cooper products.

The photographs illustrate two typical G & C installations in the new House of Representatives Office Building, Washington, D. C. Many contractors specify G & C tanks exclusively for installations of this kind in Schools, Hotels, Hospitals, Public Buildings and Industrial Plants.

We suggest to contractors having any type of tank jobs now available for estimating from 5 gallons to 5,000 gallons capacity, that they forward specifications to us at once. Estimates are furnished cheerfully without obligation. Competent G & C Engineers are always ready to assist in the solving of any particular tank problems for Heating, Treating, Mixing, Separating or other Industrial Process.

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Troop Water Heater Co., Pittsburgh Edward Sinn, Harrison, N. J.
Strong, Carlisle & Hammond Co., Cleveland, Ohio

May, 1934

Ready for Action

Business recovery is finding the automatic heat and air conditioning industry ready for action. Improved products are ready just when the public has been won over to realize their advantages. Success in profiting from this opportune situation requires only a sensible mixture of hard work and good judgment.

On the automatic heat side of the picture, one finds that engineering progress has been consistent and definite. Units for home heating, for the use of oil, coal or gas have gone beyond the pioneering stage to reach the point where refinement rather than redesign occupies the attention of the laboratory. Under the hammer like blows of actual consumer use, these heating units have been molded into sound and efficient necessities.

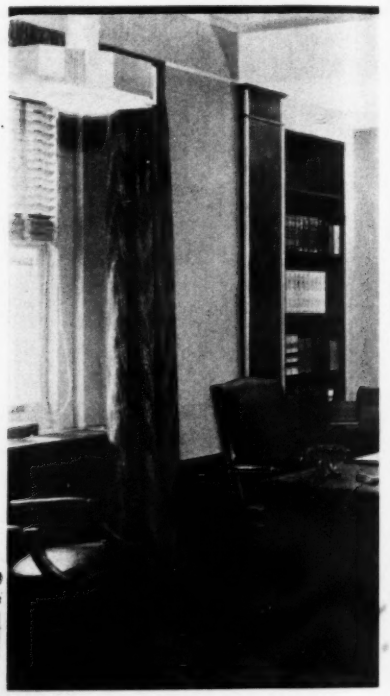
Somewhat similar progression has taken place on the sales side. Recognition has come to the truth that these domestic units require both salesmanship to get an order and enough engineering skill to keep them sold on the basis of satisfactory performance.

Now air conditioning comes to strengthen the industry's position in providing better winter comfort and to offer a means of flattening out the summer drop by adding the job of giving summer comfort. Year round comfort for American homes is a man-size job and one which offers manufacturers of both the major and accessory items, and their distributors and dealers, an expanding market of tremendous size.

That is why the return of better business is finding the automatic heat and air conditioning market so promising for both dealers and manufacturers. The market has already attracted many new manufacturers, some of them having already won in other industries a front rank position among American corporations. New dealers are also entering the field. The proper selection of these recruits and intelligent direction and inspiration to present dealers is today's big job.

How to Air Condition Office Using

This article introduces a series of specially prepared examples of air conditioning installations. They are being presented as problems and each is complete in itself although you will find data in later chapters which can be applied to all of the examples. The next installment covers a residence living room



By Harold L. Alt

AIR conditioning is not so mysterious as many have assumed in an attempt to read or study some of the existing text books on this subject; it follows natural laws just as the production of steam in a steam system or hot water in a hot water heating installation follows the laws of properties of steam and the transfer of heat. The properties of air are different—that is all. We are dealing with an old medium in a new manner and until one is as familiar with the method of handling air calculations, as with the production of steam or the transfer of heat to water, it will seem difficult; this, however, is more a manner of *seeming* than it is of *reality*.

Air conditioning is relatively new and still is in the process of development; the terms used in connection with air conditioning in many cases have been well defined meanings in current practice and other cases are still somewhat vague and hard to define. One of the most difficult distinctions to make is between *ventilation* and *air conditioning;* many systems that ten years ago would have been termed *ventilation* systems are, today, designated—especially by their manufacturers—as *air conditioning* systems, largely due to the intense interest which has been aroused almost universally in this subject.

Homes are being conditioned, offices are being conditioned, industrial processes are being conditioned, even the railroad train, the safe deposit vault, the restaurant and the department store have not escaped and theaters have really been the pioneers in comfort conditioning. The field, indeed, is practically unlimited except by the considerations of first cost and the cost of operation, both of which items have been largely responsible for air conditioning not being in every occupied structure throughout the whole country.

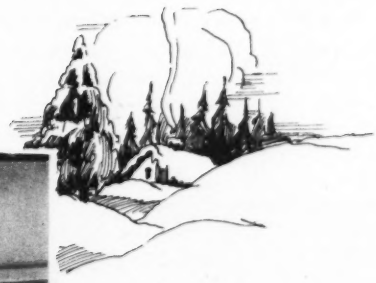
Before attempting to solve an actual air conditioning problem it is essential to know as definitely as possible just what *air conditioning* means. One authority* says that *air conditioning* implies both quantity and quality (of air) and that in addition to air change its scope is to control simultaneously the temperature, humidity, air movement and purity of the air. Also that the term is broad enough to include whatever other new factors found necessary or desirable for maintaining the atmosphere of occupied rooms at a condition best suited for the requirements of the human body. This definition applies of course to comfort conditioning only, as distinguished from process conditioning used in industrial work.

This definition may be summarized as a controlled air condition for

1. Quantity

*From 1933 Guide of A. S. H. V. E.

a Small Single Units



This office is conditioned by units placed under the windows, and this article tells you how to go about installing a similar job

2. Temperature
3. Moisture
4. Air Movement
5. Cleanliness
6. Any other Desirable Factors for Comfort and Health.

There are certain terms used in air conditioning, the meaning of which must be understood and memorized before air conditioning calculations can be made. For example, the *quantity of air* usually is expressed in cubic feet per minute (cfm.) which is changed to pounds of air by dividing by 13.34 to facilitate calculation. The *temperature of the air* ordinarily is expressed in degrees Fahrenheit (deg. Fahr.) on the dry bulb thermometer. There also is the *wet bulb temperature* which is obtained by swinging a thermometer, covered by a piece of wet wicking on the bulb, around on what is called a sling psychrometer at a rate of 150 to 225 revolutions per minute (rpm.); the *dew point temperature* which is the dry bulb temperature at which air will be saturated and the *effective temperature* which is the temperature sensation produced on the human body.

The moisture terms are designated as "humidity" which may be of two kinds—*absolute humidity*, or the number of grains of moisture per pound of air, and *relative humidity*, which is the percentage of moisture in the air as against the maximum amount of moisture that the air could contain at the same temperature. Air movement is usually expressed in feet per minute (fpm.) velocity. All of these terms will be explained more in detail as the problems are solved.

PROBLEM NO. 1

It is desired to condition the office shown in Fig. 1; what is the customary practice in such cases and how should the problem be solved?

SOLUTION

An inspection of the plan of the office shown in Fig. 1 indicates a room 14 ft. long, 12 ft. wide and 10 ft. high; the room is equipped with a steam radiator, has two outside windows approximately 4 ft. x 6 ft., two doors

Air conditioning systems group themselves into types depending upon classes of service and sizes of jobs. This article covers single units.

about 3 ft. by 7 ft., a hung ceiling and a wood floor laid on top of a concrete slab of the structure. In the locality where this office is located the maximum summer temperature reaches 100 deg. Fahr. and the lowest winter temperature is 5 to 10 deg. Fahr. below zero.

The first question to be answered is what conditioning is desired by the purchaser; in other words does he want only a conditioner for summer cooling, does he want only a conditioner for winter humidifying, or does he want conditioning both winter and summer. It will be assumed for the purpose of this solution that the purchaser is quite satisfied with the winter conditions as maintained by the radiator and is desirous of obtaining a conditioner for relief from summer heat and nothing else. This will be found to be the circumstance in many office cases.

Thus the fact is arrived at that only a cooling unit—commonly termed a "summer air conditioner"—will be necessary; also that the space to be conditioned is so small that almost any type of central system would be out of the question. So it will be assumed that a summer cooling *unit* is to be used and a consideration of what this involves must next be taken up.

TYPES OF SUMMER CONDITIONS

The summer type of air conditioning unit is made in a variety of styles by different manufacturers but in most cases includes a fan, cooling surface, a motor to drive the fan, a casing to house the unit with suitable inlet and discharge opening, and some sort of refrigerating machine. If an unlimited amount of cold water is available, such as from a well, then the refrigerating unit could be omitted and cold water run through the cooling surface but such is an unusual case and normally the refrigerating machine must be included.

The next two points to be settled are the location of the air conditioning unit and the location of the refrigerating machine which supplies the unit. Owing to the fact that finding a place for the machine sometimes is much more difficult than finding a location for the unit, let the matter of the machine be considered first. It will be noted that a slop closet adjoins the office and that in this closet is a slop sink with the usual hot and cold water supply together with a waste pipe for the slop sink. Now a refrigeration machine of the type used on almost all air conditioning units requires a small supply of cooling water, a waste connection to dispose of the cooling water and an electric service for operating the motor.

COMPRESSION TYPE MACHINES

This is because most of these machines are of what is known as the compression type—that is they compress the gas used as a refrigerant to a high pressure, pass it through a condenser where the cooling water removes the heat and condenses the refrigerant, and then supply the liquefied refrigerant under the high pressure to the cooling element in the unit where it is admitted through an expansion valve and the removal of the pressure, after passing through the valve, causes the liquid to evaporate picking up heat for this purpose from the air passing across the cooling surface in the unit. Then the gas goes back to the refrigerating machine to be recompressed and to repeat the cycle of operation. The power required to compress the gas is secured from an electric motor.

So it will be seen that the refrigerating machine not only must have available water, waste and electric connections but it also must be connected to the unit by a liquid refrigerant supply pipe and by a gas return pipe. Consequently, if the refrigerating machine is to be located in the slop closet, the *unit* should be located as near to the slop closet as possible to avoid long runs of refrigerating piping. On the other hand, this item should not be considered of so great importance as to require the unit to be placed in the room in an undesirable location just to cut off a few feet of run for the refrigerant piping.

A farther inspection of the room shows two ceiling lights, a desk lamp and no other sources of heat beyond the normal occupants—which are two—and the heat coming in from the walls, ceiling, floor, and partitions. Knowing from heating experience that the heat transmission of glass is about four times as great as the average wall and knowing that the sun may shine on the windows at certain times—provided that the windows are not north windows—it will be seen that the windows are the largest concentrated producers of heat in the room; as the practice in heating is to place the radiator

(Continued on Page 90)

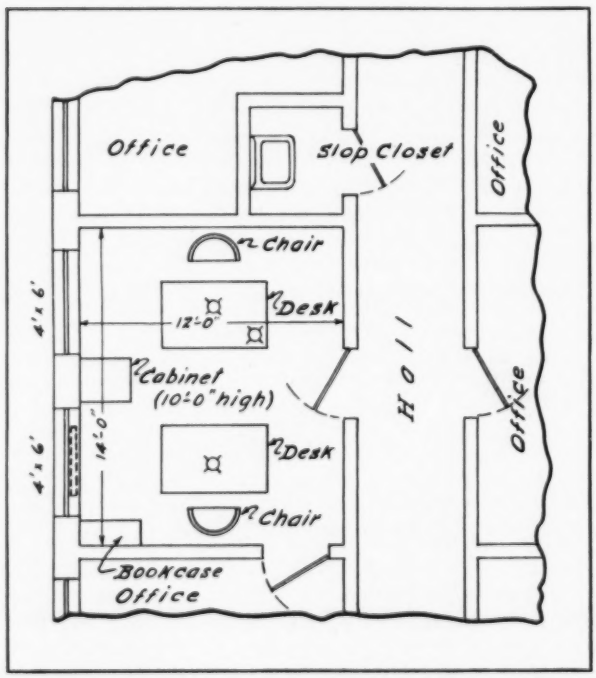


Fig. 1—Here is a plan of a typical office to be air conditioned

This Large Installation of Air Conditioning and Oil Heating Equipment Contains Many Examples Which can be Used in Working Out Similar but Smaller Types of Jobs

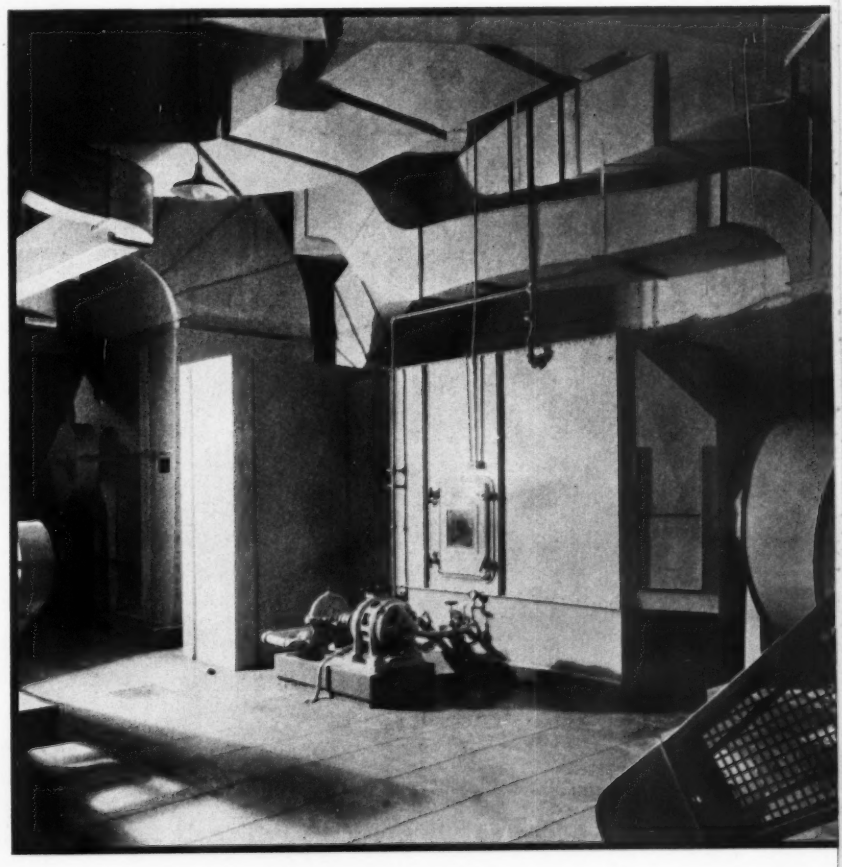


Fig. 1—This illustration indicates some of the duct work involved in making the air conditioning installation for the Professional building located at Phoenix, Ariz.

Installation Ideas

Features of Interest for Both Big and Small Jobs

By E. G. Fisher

THE professional building in Phoenix, Arizona presented a number of outstanding problems from the angle of the air conditioning installation. It serves doctors and dentists and because of specialized requirements, noteworthy features were worked out.

The heating is a low pressure vacuum vapor job. The heat is delivered by direct radiation. All the steam is carried directly to the tower, where it is fed back down through four separate mains. One main for each side of the building creating four heating zones. Each main is controlled by a thermostatic valve. The thermostats are located on the 6th floor, it being most nearly the center of the building. These valves may also be operated automatically by the engineer from his control room.

These separate heating zones afford tremendous savings in cost of heating operation. Which ever side of the building is getting the benefit of the sun's rays has

its steam consumption automatically reduced.

The oil burners present an unusually efficient installation. The boilers are mounted on concrete bases two feet high to increase the combustion area. Two 150 horse power and one 30 horse power rotary, semi-automatic, heavy fuel oil burners are connected with a 6,000-gallon storage tank which is buried in the alley. The bottom of the tank is 29 ft. below the street level. The fuel gauge for this is mounted in the control room.

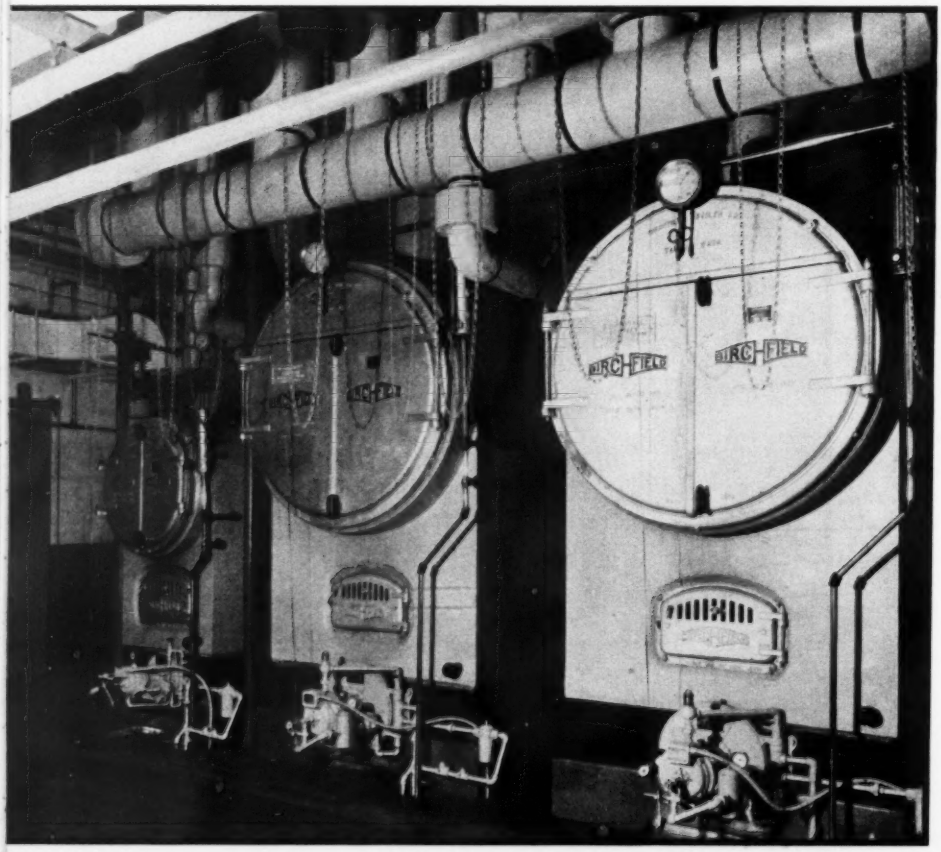


Fig. 2—Interesting problems were encountered in sinking the oil storage tanks serving the oil burners shown here

We sublet the job of excavating for the oil tank to the general contractor. This was a very satisfactory arrangement. In Phoenix, the majority of the excavating jobs run into quick-sand. This specific installation was no exception.

The bottom of the excavation was 29 feet below street level. We cribbed the hole with 2x12 planks 20 feet long and shored it with 4x4's. Everything went along smoothly until the tank was practically in place. Then as we removed the last row of shoring, the sand shifted just enough to cause an 8 inch sewer line from a Hotel on the other side of the alley to give away. Water from this broken sewer rushed in and washed large quantities of sand and dirt away from behind the cribbing and the shoring slipped.

Luckily for us, the large concrete mixer for the building was set up close to our excavation. Quickly we got it in operation, poured concrete in the hole, covered the oil tank and stopped the seeping, avoiding a serious cave in.

It may be of general interest to mention that in a more recent installation of a big tank, we worked out a more satisfactory way of handling the quick sand. This excavation was under an ancient four-story brick building, having a rock and mortar foundation where any slips would be disastrous.

We cribbed and shored with heavy planks, first. Then we drove in old railroad irons. Stood the rails on end, sides touching, all the way around the hole. Then we poured 2 feet of concrete in bottom of hole. This anchored the irons at the bottom leaving no chance for slippage.

The control room is decidedly out of the ordinary. All the mechanical equipment of the building is of the finest and some of it is a decided departure from usual installations, particularly the air-conditioning equipment.

The control room is a plate glass enclosed office in the center of the machine room. Here all the gauges are mounted on panel boards, duplicating the gauges on the various equipment. At a glance the engineer can read the steam pressure, the vacuum pressure, and the ice water temperature, to mention a few of the duplicate gauges, mounted in the control room. On a caliscope is shown the humidity content of the outside air. By pressing a button on the caliscope the condition of the air in any part of the building is shown by the wet bulb depression. Over here is an unusual instrument, a manimeter. By operating different valves on this device it is possible to tell exactly the gallons-per-minute that the different pumps in the buildings are delivering. Here is read the operations of the house pumps, the ice water circulating pumps, chilled water pumps for the cooling plant and the wells which supply water for the air-conditioning plant.

In the machine room are the engineer's quarters which include a private shower room, toilet and lavatory room. These are well fitted and like every minute part of the equipment of the building are kept up to "show" standard.

The Horral Company also got all the piping for the air conditioning equipment which was a good sized job as the pumps and refrigerating machinery are in the basement and the air washers are in the tower. The

"Everything went along smoothly until the tank was practically in place when the sand shifted enough to cause an 8-inch sewer line to give away."

building is built in wings which design also increased the distance to be traversed by the chilled water lines.

Tempering radiators provide for comfort control of the ventilating air. Fresh air is provided through ventilators in the ceilings, delivered from the air washers in the tower. Obviously much of the time the refrigerating machinery is not used to chill the water in the washers. During the winter the incoming fresh air is too cold to release into the rooms to blow on the naked backs of sick patients. But the need for fresh air is imperative. To fill this need heaters were installed in the ducts of the washers to warm the air as it leaves the baffle (where excess water is eliminated) before it rushes down onto some protesting doctor's head.

CONTROL OF VENTILATING AIR

These tempering radiators are also used occasionally during the summer. Air-conditioning equipment meets its severest test on those days when the humidity content climbs abnormally high. To hold the wet bulb reading down, the water going through the washers must be much colder than the 44-48 degrees Fahrenheit (which is used much of the time) if it is to condense the moisture out of the air. The air coming from the washers when the cold water has been lowered to a colder temperature to conquer the excess humidity is then objectionably cold. By turning heat into the heaters, the cold air as it leaves the washer is warmed to a more moderate degree of coolness to meet the requirements of the "comfort chart."

One novel engineering feature of the Professional Building is the design of Ralph Phillips, the mechanical engineer, to handle the condensing water for the ice water refrigerating machine.

Several factors entered into Mr. Phillips' design. The ice-water refrigerator machine—a ten-ton unit—is quite large for a building of this size. Large quantities of ice water are used in this building because of the semi-tropical climate which increased the amount of consumption of ice drinking water. There are ice water fountains in the halls on every floor and in practically every individual office. Also in a warm country like Phoenix, where the mercury stands at 110-115 deg. Fahr. for three to four months, laboratories which develop films must have quantities of cold water or their films will be injured in the finishing process. In the Professional Building, Mr. Phillips had to meet the ice-water demands of three large X-ray laboratories and 36 smaller laboratories.

A cooling tower, as is often used to handle the condensing water, was not a practical solution in this case. Another alternative, a waste well, was not desirable because of the existence of two large wells which handle the air-conditioning plant and also because the city water at meter rates in Phoenix is too expensive to waste.

The problem of disposing of this large quantity of water was solved by utilizing it in an original manner. An important incident in utilizing this water was not only the saving realized from putting waste water to use but a second economy was afforded by the saving in the cost of heating hot water. This double saving will be made clear as you follow the description of the diagram of this lay-out.

The condensing water is drawn directly from the house tanks in the tower on the 12th story. This water is run through the refrigerating machine and then is pumped into the base of the main riser which supplies all the toilet rooms on every one of the eleven floors.

At the base of this riser the cold water supply of the hot water storage tank is taken off. An appreciable saving in the operation of the building is afforded by using the condenser water in the hot water supply as the water discharged from the refrigerator machine is considerably higher in temperature than city water and does not require as many Btu. to raise it to the desired temperature.

The excessive condenser water not consumed by the hot water heater then rises naturally up the main riser en route to the house tanks on the roof. Only a negligible amount ever reaches the roof tanks, for in actual operation (note drawing) this returning waste

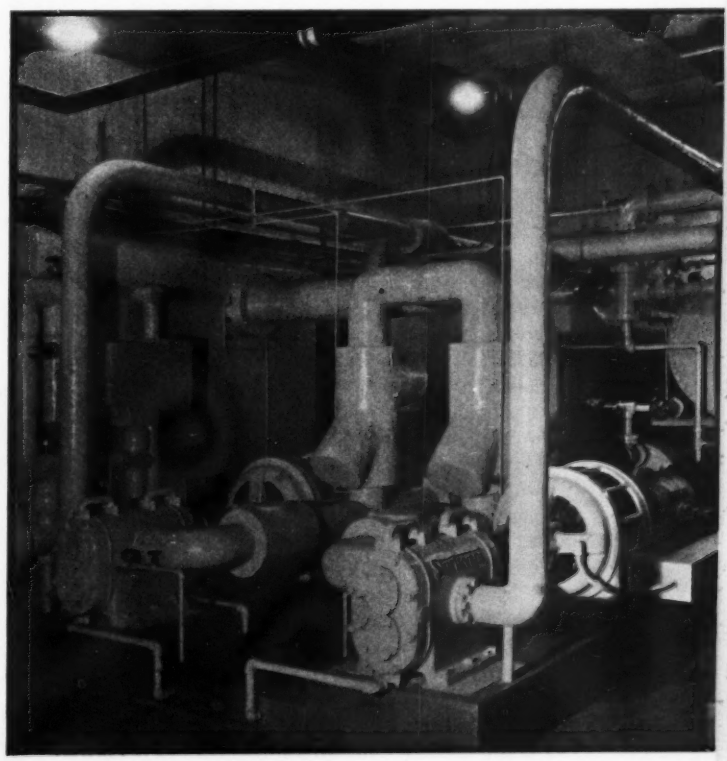


Fig. 3—Refrigerating machinery for the installation described in this article is shown here

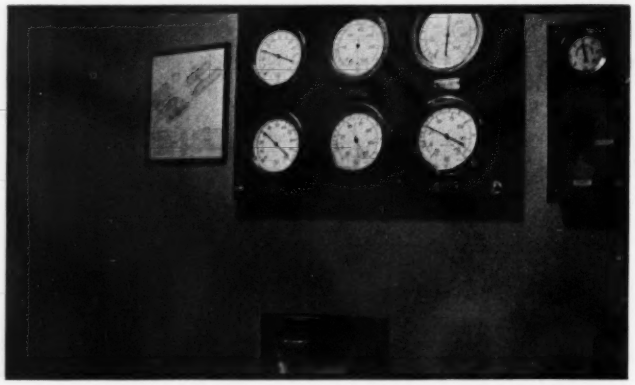


Fig. 4—Above is a view of the panel boards and cooling plant chart on the walls of the engineer's office

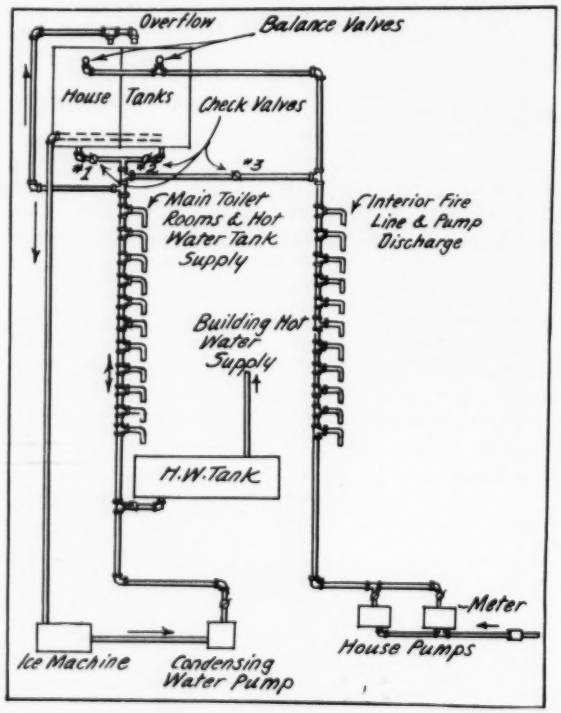


Fig. 5—The problem of disposing of the large quantity of cooling water was solved by utilizing it in an original manner as indicated by this diagram. With this arrangement both water was saved and the heat in it was used

water is consumed by the 58 fixtures in the main toilet rooms.

To handle the condenser water which occasionally will find its way back to the house tanks, a check valve diverts it to the top of the tank. This provides for cool water always being drawn from the bottom of tanks.

The compressed air system is unique in that it provides air at three separate pressures. A large public garage occupies almost the entire basement. For this, air is supplied by 2 large compressors at 150 pounds pressure for automobile tires, gasoline pumps, etc.

From the 150 pound receiver the air pressure is reduced to a second tank which supplies the 380 outlets in the offices with air at 30 pounds pressure.

From this second tank, the air is reduced to a third tank at 15 pounds pressure. This 15 pound pressure is used in the system to operate the thermostatic valves and dampers for the heating and cooling system.

Heat Transfer

In considering indirect heaters set above the water line the transfer is between a gas (steam) and a fluid (water), which is a slower transfer than between two fluids (water and water), such as occurs when the indirect heater is set below the water line of the boiler. When installed above the water line the coil is exposed to the steam, but the latent heat of the steam has nothing to do with the heat transferred by the coil. This easily may be proved by considering the conditions for a heater supplied with steam at atmospheric pressure at 5 lb. gauge, and at 100 lb. gauge pressure. It is a well known fact that a coil will heat more water, or the same water more quickly, when supplied with high pressure steam than it will with low pressure, and similarly it will do more work when supplied with low pressure steam than it will when it has only atmospheric steam.

Fig. 6—By pressing a button on the instrument shown in the bottom photograph, the condition of the air in any part of the building is shown by the wet bulb depression

This typical Earl Brown trouble story covers a unit heater temperature control and piping job

By Earl Brown

An Automatic Control Problem

In the small town of Caseyville, Ohio, there is a garage owned by Bill Gayle, the mayor, specializing in repair work, and a very good garage it is, too. I came to know of it because it presented a problem in air conditioning last fall which puzzled Mr. Armstrong, Caseyville's heating contractor, to such an extent that he requested my advice. There were present all the elements necessary for a system that could keep the garage comfortable at any time except during very hot weather. Yet because of a lack of coördination and proper adjustment, conditions were far from satisfactory.

The heating contract had been let to an out-of-town firm to save less than $100. Shortly afterward, that firm had gone bankrupt. Consequently the garage job had never been properly adjusted. The owner hated to call Mr. Armstrong so he tried to worry along, hoping that the system would be all right soon. Finally he was forced to ask for help, however, and when the local man could not locate the trouble, he took me to the garage to look over the situation.

Mr. Gayle greeted us with much gusto, in his best political manner and seemed prepared to go on endlessly, so we found it necessary to interrupt him by bluntly asking, "What is wrong with this heating system?" He became very eloquent on that subject, also, so I shall repeat only the important part of what he said:

"I never saw such a flop of a heating system in my life. The heaters start and stop for no reason at all; the boiler blows off at any old time; about half the time the heaters are blowing cold air, making the place as drafty as Chicago's Michigan Boulevard; and when they are heating, one part of the building is hotter than a July day, and the rest is colder than January. What do you make of that?"

Before I could answer it was necessary to study condi-

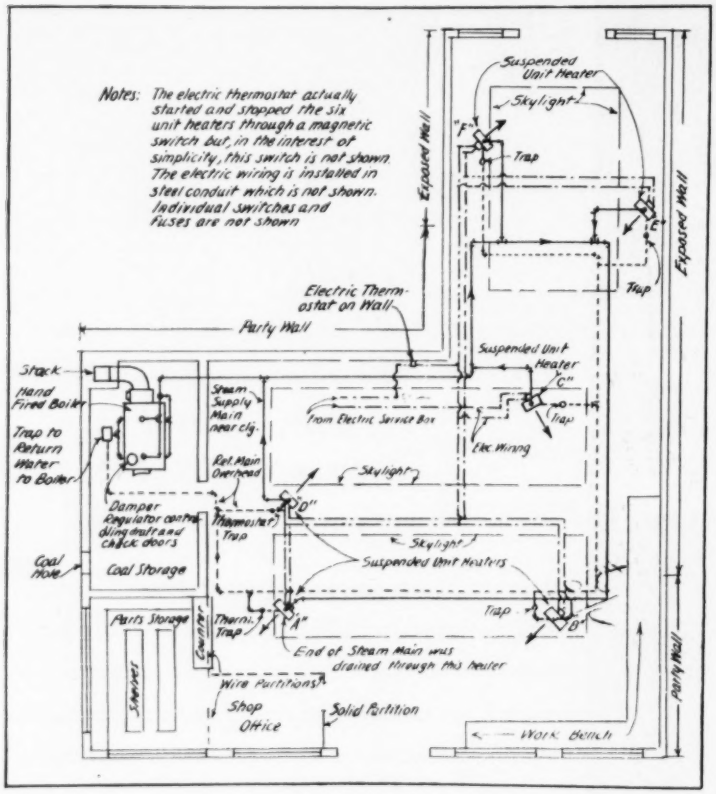

Notes: The electric thermostat actually started and stopped the six unit heaters through a magnetic switch but, in the interest of simplicity, this switch is not shown. The electric wiring is installed in steel conduit which is not shown. Individual switches and fuses are not shown
Suspended Unit Heater
Skylight
Trap
Exposed Wall
Electric Thermostat on Wall
Party Wall
Stack
Hand Fired Boiler
Trap to Return Water to Boiler
Steam Supply Main near ceiling
From Electric Service Box
Elec. Wiring
Ret. Main Overhead
Damper Regulator control ash pit door and check doors
Coal Storage
Coal Hole
Thermostatic Trap
Suspended Unit Heaters
Parts Storage
Shelves
Thermo. Trap
End of Steam Main was drained through this heater
Wire Partitions
Shop Office
Solid Partition
Work Bench

Fig. 1—At the left is the plan of the unsatisfactory job. The piping and control arrangements are indicated

tions carefully and to make myself familiar with the whole layout. The garage is an L-shaped building as shown in Fig. 1. It faces the main street of Caseyville with an alley on the left side and a store on the right. The leg of the L extends to an alley in the rear. There are two doors, one on the main street and one on the rear alley.

It is heated by six suspended type unit heaters located as shown in Fig. 1. Steam is supplied by a hand fired cast iron boiler and is circulated by a low-pressure vapor system. The steam supply main is near the ceiling and is arranged in one loop, with the end of the main drained through the last unit heater.

The return main is suspended under the unit heaters but it is high enough to provide ample clearance from the floor.

The heaters are arranged in what appeared to be a logical manner and seemed to be large enough, but to make sure, I inquired if they had enough heat in cold weather. I was told that they did, but it was in the mild weather that they experienced most of the trouble. This certainly indicated that the boilers and heating plant were big enough so I did not worry about that part of it any longer.

I noticed that the shop office and the parts storage room are not provided with radiators. They are separated from the work space by wire partitions and one of the heaters blows directly on those two spaces.

"Is the office warm enough?"

"Usually," Mr. Gayle said, "but that heater (pointing to unit heater "A," Fig. 1) does not seem to give off as much heat as the others do. At least the air from it does not seem to be as warm as the air from the others."

"That is interesting. I'll remember that. How are these heaters controlled?" I asked because I did not see a thermostat.

"By this room thermostat," Mr. Armstrong informed me and he showed me the location of the thermostat shown in Fig. 1. "That controls all the heaters."

I traced out the thermostat wiring and found it to be arranged about as shown in Fig. 1. The room thermostat was evidently too small to control the six heaters, so it was arranged to start and stop the motors through a magnetic switch. To avoid unnecessary complications, this switch is not shown in Fig. 1.

When I thought I understood the situation fairly well, I asked Mr. Gayle to relate to me a detailed account of the action of this heating system.

"Well, when we first started up the system last fall the motors would start and stop, and start and stop for no apparent reason. A few days after we started the motors I had one of my mechanics oil all the motors. He stopped each one while he was oiling it, and while he was oiling this motor," he pointed out unit heater "D," Fig. 1, "he was called to the phone, and left the motor stopped. He was gone for quite a while, and while he was gone, one of the men

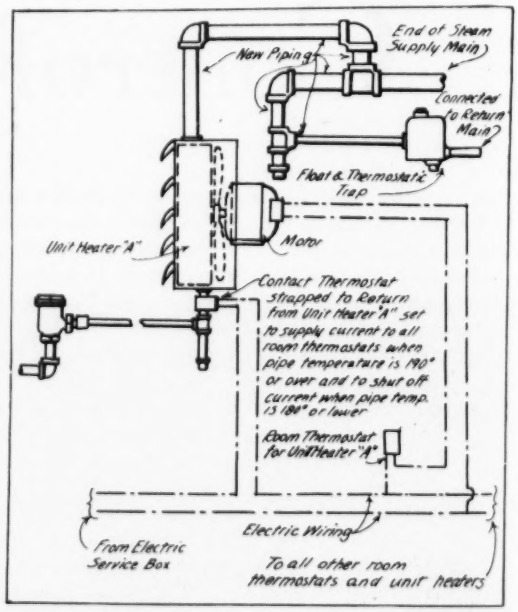

End of Steam Supply Main
New Piping
Connected to Return Main
Float & Thermostatic Trap
Motor
Unit Heater "A"
Contact Thermostat Strapped to Return from Unit Heater "A" set to supply current to all room thermostats when pipe temperature is 190° or over and to shut off current when pipe temp. is 180° or lower
Room Thermostat for Unit Heater "A"
Electric Wiring
From Electric Service Box
To all other room thermostats and unit heaters

Fig. 2—Here are the suggested piping and wiring changes for the last unit heater

noticed that the heaters continued to run. He called it to my attention, so we experimented a little. We discovered that when this heater (unit heater D, Fig. 1) is turned on, all of the heaters start and stop every few minutes, but if this heater is turned off, the others start and stop less frequently. Since we learned this, we turn this heater on only in very cold weather or for a little while in the morning to help heat up the building."

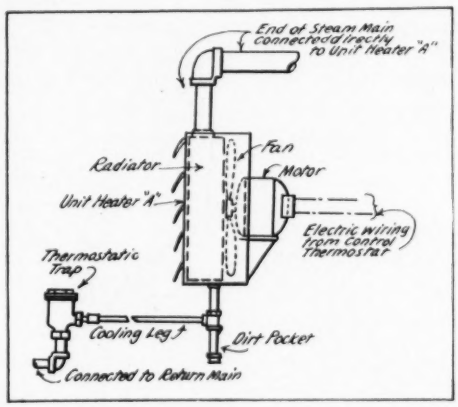


Fig. 3—This is the original piping arrangement which caused the heater to blow cooler air than the other heaters

"Didn't you suffer from lack of heat before you learned to shut off this heater?"

"No, because the weather was quite mild. Can you tell me why shutting off this heater has such a great effect on the others?"

"Yes, I believe I can. Did you ever notice that this heater blows almost directly on the thermostat?"

"No, I didn't."

"Well, it does, as you can readily see. As a result, when the fan is running, the thermostat is heated up very quickly and it stops the whole group of heaters until it cools down again. That can be easily fixed, for all you need do is to move the thermostat. Now, what did you say about a variation in temperature in different parts of the building?"

"When the back door is open for quite a while that part of the building gets extremely cool, especially if the wind is from that direction. The same thing happens when we open the front door. Even when the doors are closed, the windward side is always much cooler than the other side. We have tried to improve this condition by setting up the thermostat in order to keep the heaters running long enough to warm up the cold side but when we do, the other side becomes too hot. How would you fix that?"

I looked around again and then I told him, "There are four distinct heating zones in this room. First, there is the corner where you have your office. This portion of the building should have its own heater and thermostat. Then there is the space next to the boiler room. It has a large skylight over it and should be heated and controlled separately. The work bench in the opposite corner should also be separately heated. Finally the portion adjoining the rear alley is obviously a separate heating zone because it is more or less isolated from the rest of the building. I believe you can overcome the uneven heating by controlling the heaters in four groups instead of one."

"That sounds logical. What is your suggestion to prevent the heaters from blowing cold air and causing drafts?"

"Who fires the boiler?"—"Anyone who thinks of it."

"Oh, a case of everyone's business and no one's business. How do you fire it?"

"Very lightly. If we fire heavily the boiler blows off every time the heaters stop, so we try to fire lightly to prevent that."

"And in doing so you frequently let the steam go down so low that the heaters blow cold air. Well, controlling the heaters in four groups will keep your boiler from blowing off, even with a good fire. With your present arrangement, practically the whole boiler

(Continued on page 92)

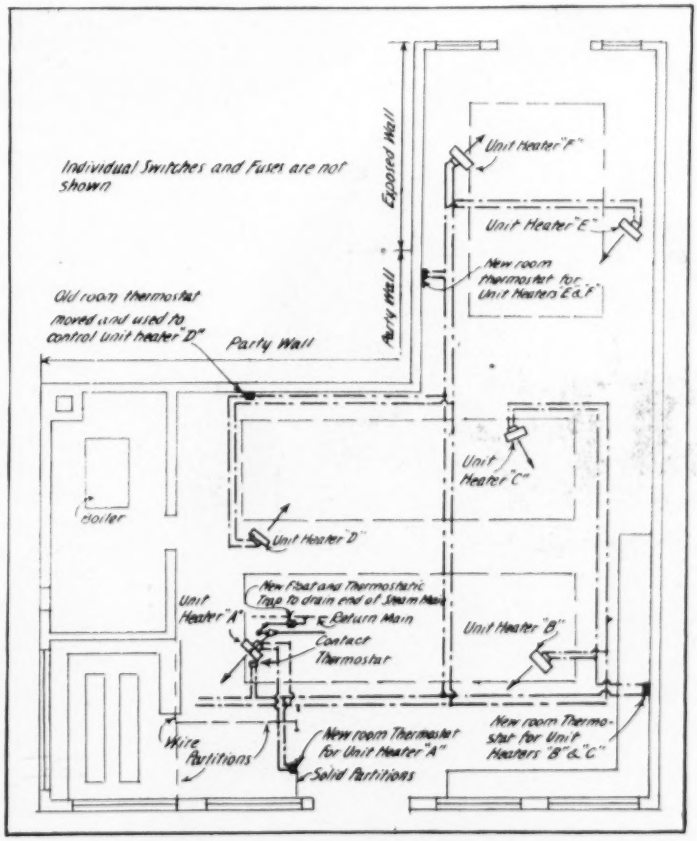

Individual Switches and Fuses are not shown
Exposed Wall
Party Wall
Party Wall
Unit Heater "F"
Unit Heater "E"
New room thermostat for Unit Heaters E & F
Old room thermostat moved and used to control unit heater "D"
Unit Heater "C"
Boiler
Unit Heater "D"
New float and Thermostatic Trap to drain end of Steam Main
Return Main
Unit Heater "A"
Contact Thermostat
Unit Heater "B"
Wire Partitions
New room Thermostat for Unit Heater "A"
Solid Partitions
New room Thermostat for Unit Heaters "B" & "C"

Fig. 4—The piping and wiring changes which made the system satisfactory are shown here

Service *Is the Basis of this Dealer's* Sales *and* Installation Success

Fig. 1—This stoker installation, made by the dealer whose activities are described here, feeds coal from bin

"OUR FIRM has not sold a large number of stoker units, less than a hundred during the past few years," says Joseph K. Goundie, sales engineer for J. E. Edwards and Son, heating contractors of Allentown, Pa. Mr. Goundie then explained that even with this limited sales volume their stoker department has been quite successful. They are building it on a firm foundation for a large increase in business in the next few years. The following story of their ideas and activities indicates how they measure success and how they are building for the future.

"We have not been asked to remove a single stoker that we installed because of unsatisfactory operation or results," he asserted, "and that record may have been equaled but it has not been surpassed. Neither have we at any time had a single 'compel call' to service a stoker installed by us.

"All the 'compel calls' we have had," he explained, "were on stokers which had been installed by other dealers and the reasons for those emergency calls were quite plain when we inspected the method of installation and the lack of service that had been given the equipment. In some instances we found that stokers had been installed several years and that not a single call had been made by the dealer to check up on the operation and make the necessary adjustments.

"Stoker merchandising handled in this manner can cause nothing but grief. It is a vivid example of the wrong way to do business. That is why there are unsatisfied customers, why emergency calls are frequent and complaints occur.

"In our own business we have taken extraordinary precautions to guarantee immediate service on every stoker installed by us. We have on hand an ample supply of the parts which are likely to fail under severe service conditions, and we also have at all times two assembled stokers which we can tear down for service parts if necessary.

"But here is the real secret of successful stoker merchandising: Why wait for service calls? Why not anticipate the requirements for service before the need actually arises? The reason why we do not receive emergency calls on our own installations is because we make it unnecessary for the customer to report trouble. That is why we can refer prospective customers to any installation we have made with the assurance that the owner will do a better selling job than we can do. If a dealer cannot point to his entire list of stoker installations and tell the prospect to call on any one for a recommendation, then there is something lacking.

"Many questions have been asked regarding the methods we use to secure what others term unusual customer co-operation. The answer can be found in our service plan. A stoker installed by us is serviced so carefully during the first year that there is little probability of emergency service being required. This first year service is included in our contract without extra cost to the customer.

"After an installation is made we check rather frequently on the heating efficiency attained and the mechanical adjustments. When we are certain that it is giving absolute satisfaction from the point of heating comfort in the home, amount of fuel consumed and cleanliness in operation, the installation is entered on our

Fig. 2—Here is another stoker installation by this dealer. Note the ash removing facilities combined with the provisions for feeding the coal

"We have found that the service contract is essential to develop satisfied customers. It represents a large potential profit in creating a list of customers to actually become salesmen for us."

service list to be inspected at least four times during the year. During the period from November to March we make two or three service calls, and these are not mere perfunctory calls to ask the owner whether everything is working properly and letting it go at that if the answer is yes. That isn't our idea of service.

"When we service a stoker we remove the fly ash, oil the mechanism and inspect the parts to determine whether they are in condition to assure uninterrupted operation. Frequent removal of fly ash may not be so necessary, but it helps to maintain the efficiency of the equipment. No owner can get full efficiency out of a plant that is clogged with several years' accumulation of fly ash.

"It may not be necessary to oil the mechanism so frequently, but a drop of oil in time will prevent trouble that gallons of oil cannot correct later on. This kind of service is necessary to build for future success in stoker merchandising. We do not sell a stoker with the idea that the owner is supposed to take care of the mechanism. We don't want him to do that. So far as possible we want him to forget that he has a stoker. The less he has to think about the mechanical part of it the more likely he is to be satisfied and to recommend it to others.

"All we impress upon his mind is to check on his coal supply in the bin if he has the automatic conveyor attachment, or to keep coal in the hopper, and to remove the ash cans when they are full. We want the customer to be appreciative of the comfort and convenience of automatic heat. We want him to feel that we have taken all responsibility for the operating mechanism, to consider it as one of those mysteries that provides for his comfort without attention on his part.

"The first year's service is rendered free, but to guarantee the continuous satisfaction we must sell that service for subsequent years. Our annual service charge is

$20, which includes the labor and time necessary during the year but not the actual cost of parts necessary for replacement. Dealers have in too many instances assumed that the owner cannot be sold a service contract after the first year. I believe the reason is because the importance of service is not properly sold to the customer when he purchases the stoker and during the first year after installation.

'When we sell a stoker we do not create the impression that no service will be required. Instead, we stress the service feature, the time we spend in making inspections and the equipment we have to render such service. We then show the owner how much the same amount of service would cost if purchased on an emergency call basis.

WHEN SERVICE CONTRACT EXPIRES

"At the expiration of the first year we approach the owner and explain that the first year's service contract has expired. We show just what we have done during the year to keep his home comfortable and that the same ideal conditions will continue if he will permit us to render the same kind of service during the coming year. This service feature is not difficult to sell, but it plays a vital part in the merchandising plan.

"Some dealers prefer not to bother with service contracts. Their attitude is that they cannot do all that work for $20 a year and make a profit on it. Better wait for service calls and charge the usual rate for labor and material. That statement is true as far as it goes, but it doesn't go far enough. We have found that the service contract is essential to develop satisfied customers. The service may not represent an immediate profit, but it does represent a large potential profit in creating a list of customers who actually become salesmen for us. That is what the service plan has done for us; turned customers into boosters and salesmen for stokers.

"We employ no outside salesmen to dig for leads and prospective customers. The men who use our stokers are the people who actually do our selling. It is not unusual for one of our customers to say to me, 'I just talked to Mr. ——— about a stoker. I think I've sold him but you'll have to see him to get his contract.'

"So long as we can develop that kind of co-operation we will not have to worry about future success in selling stokers. Most of the prospective customers we contact are partly or wholly sold before we call on them. Not so long ago I called on a prospect whose first statement was: 'You don't have to tell me a sales story. I know what the stoker is doing in my friend's home. What I want to know is this: Will it work just as well in my boiler?'

"We arranged to install a stoker, giving him thirty days to determine whether or not it would prove satisfactory. Thirty days later we received his check.

IMPORTANT SALES POINT

"There is another point that seems rather important to us. Our theory is that the stoker should first be sold to men of importance in the community. If the influential men of our community use and recommend stokers, we will pave the way to contact that large number of prospects whose prominence and financial position is not so apparent. That is one reason we have not as yet sold stokers on the installment plan, not because the plan is of little interest to us, but because we have not yet made real efforts to contact this class of customers.

"Practically all the installations we have made are in the homes of men who occupy prominent positions and are well known in this territory. They are men who know what they want and are able to pay for it. But they are not unlike other men in that they like to tell others about the things that give them a great deal of pleasure and satisfaction."

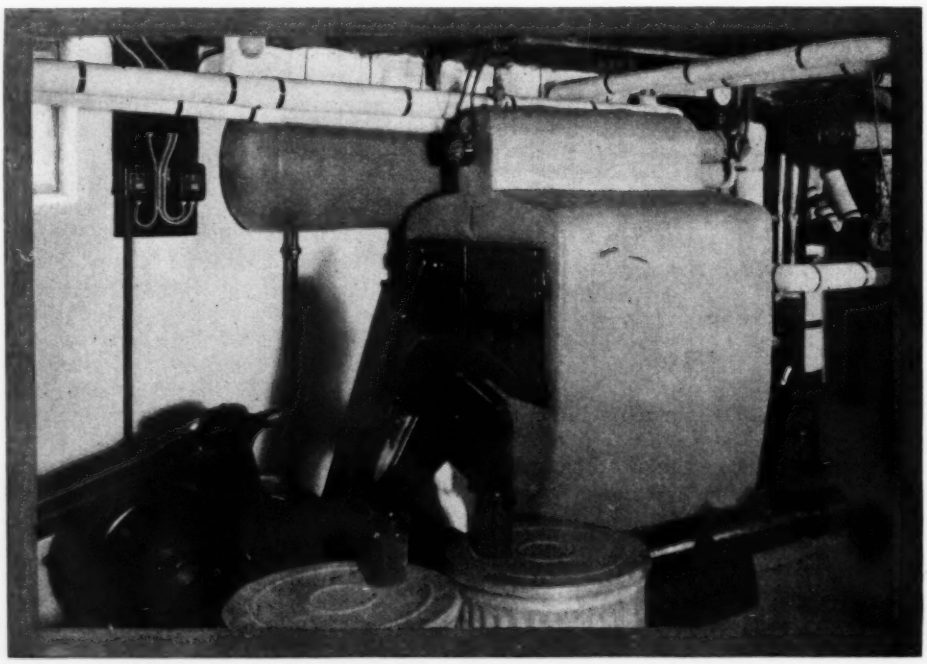


Fig. 3—Another completely automatic heating installation made by this dealer

Temperature Control for Home Comfort

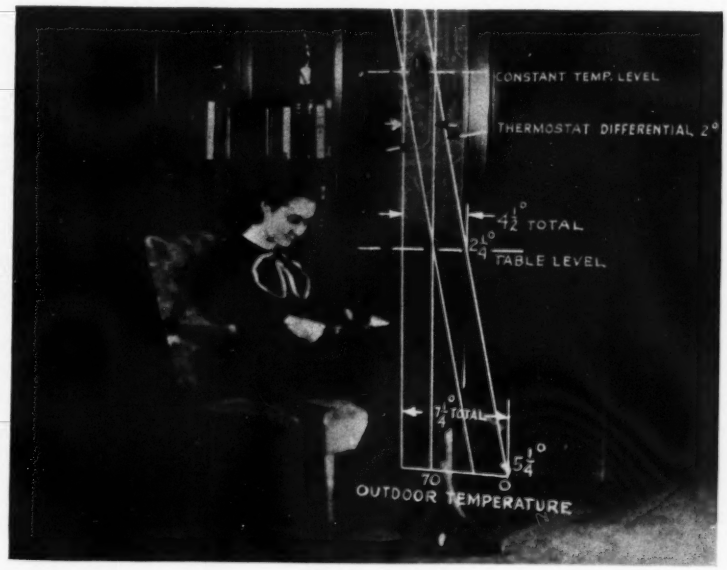


Fig. 1 — Graphic representation of drop in temperature at the floor as outside temperature lowers to zero with conventional thermostat mounted at eye level

What is overrun? What is underrun? How does stratification affect comfort and control the placing of room thermostats?

Every automatic heat and air conditioning installation is dependent upon its controls. Therefore, the importance of this subject cannot be overestimated. The purpose of this article is to analyze such control as it exists in many homes today, on the basis that any improvement first must be accompanied by a thorough understanding of the present conditions.

MOST of the conventional thermostats which now are installed have a differential of from 1½ to 2 degrees or more. This means that when the thermostat turns on the heating equipment, there has to be an increase in the temperature of the thermostat parts of 1½ to 2 degrees before the burner is stopped. This warming of the thermostat parts is accomplished only by an increase in the temperature of the air in the room.

After the burner is started, it is required to run a comparatively long time in order for heat, generated at the boiler, to be transmitted to the room in which the thermostat is located and then reach the thermostat by air circulation or convection. By the time the thermostat parts are warmed 1½ to 2 degrees by this method there is an excessive amount of heat stored in the heating system which continues to pour into the room even after the thermostat is satisfied and the burner is stopped. This overrun of room temperature overheats the room causing a long standby period. Such a long shutdown period results in the heating plant and its distributing system becoming cool, so that, when the thermostat again calls for heat there is an underrun of room temperature, the amount depending upon the time required to begin raising the temperature of the room again.

With practically all heating plants and the conventional type of thermostat, there is an overrun and underrun, both of which must be added to the differential of the thermostat. This accounts for a wide variation of temperatures in the room which in many cases amounts to as much as 6 or 8 degrees.

Good circulation of air within the room is extremely important with such controls requiring this increase of 1½ to 2 degrees of the thermostat parts by air tempera-

This article consists of excerpts taken from a paper by Nelson B. Delavan and L. M. Persons of Penn Electric Switch Co. entitled "Home Temperature Control Problems," which was presented at the 11th annual American Oil Burner Association Convention in Philadelphia, 1934.

ture rise. If the thermostat is located in a dead air pocket it might require an increase of 4 or more degrees in the room before the thermostat parts are raised 2 degrees. Likewise, during the shutdown period, a similar change of room temperature is required before a 2 degree change is felt at the thermostat, thus materially increasing the total room differential.

A wide thermostat differential, overrun and underrun, gives rise to a very decided feeling of chillness at the low temperature. Having been comfortable at the maximum temperature, a drop of even two degrees is quite noticeable and leads to a desire to make the top temperature

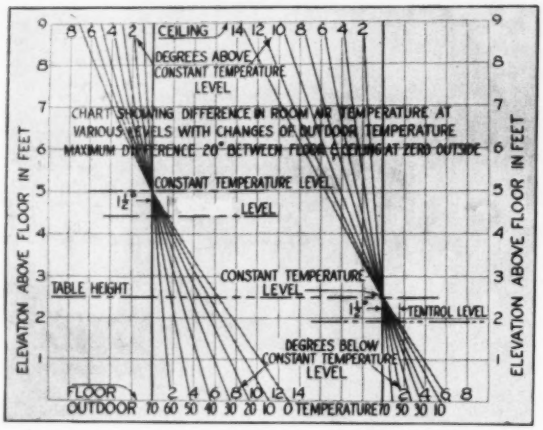

CEILING
DEGREES ABOVE CONSTANT TEMPERATURE LEVEL
CHART SHOWING DIFFERENCE IN ROOM AIR TEMPERATURE AT VARIOUS LEVELS WITH CHANGES OF OUTDOOR TEMPERATURE
MAXIMUM DIFFERENCE 20° BETWEEN FLOOR & CEILING AT ZERO OUTSIDE
CONSTANT TEMPERATURE LEVEL
TABLE HEIGHT
CONTROL LEVEL
DEGREES BELOW CONSTANT TEMPERATURE LEVEL
FLOOR
OUTDOOR TEMPERATURE
ELEVATION ABOVE FLOOR IN FEET

Fig. 2—Chart shows reduction in temperature differences with many control installations with thermostats located at different levels

the minimum. This has meant that in most cases the thermostat is adjusted to a higher temperature than should be necessary. This increases fuel consumption and to some extent increases the total room variation. Obviously, there are other factors which enter into the feeling of chilliness even though the thermometer on the thermostat reads 70 deg. Fahr. These include items such as humidity, air motion and stratification.

In many homes a system of control is used whereby the temperature of the house during the night is carried at some lower level with the control at day temperature being automatically re-established. Following this morning "Bringing up" period, room temperatures invariably overrun considerably. Frequently the thermostat is set back during this period of excessive overheating, and later on raised when the house drops to the level of this latest adjustment.

During the night period the temperature of the wall on which the thermostat is mounted lowers considerably over that which it assumes during day operation. While the burner is running to bring the room up to day temperature, the temperature rise of the conventional 1½ to 2 degree thermostat lags behind the increase in air temperature. This will readily be appreciated when it is recalled that the wall is slower to rise in temperature and therefore exerts a retarding influence on the thermostat since it is attached to the wall and is in thermal contact with it.

Many have interpreted this condition as caused by a thermostat which was not sufficiently responsive or sensitive and which has too wide a differential when, as a matter of fact, that same thermostat would show its normal differential and prove to be responsive, when removed from such a retarding influence and operated in air.

To verify the truth of this statement, an experimental thermostat having a differential of ⅕ degree was installed at a location providing good air circulation in a home heated by hot water. Careful records were made of its performance and showed the room differential to be about 1½ degrees. Burner operation over comparatively long periods of time produced overrun and underrun, in the same manner as has been described previously by thermostats of wider differential and for the same reasons.

From the first days of the use of the room thermostat, it has been the custom to locate it at approximately eye level. This practice has been continued. With such a high location, even with temperatures controlled on a straight line at that point, there are extremely wide variations in what might be called the effective temperature or four foot zone—that is, the zone between the floor and the head of a person seated, say up from the floor about 4 ft. As the weather gets colder, the temperatures in this zone lower materially. See Fig. 1.

This has necessitated frequent changes in the thermostat setting in an effort to be comfortable. While a cer-

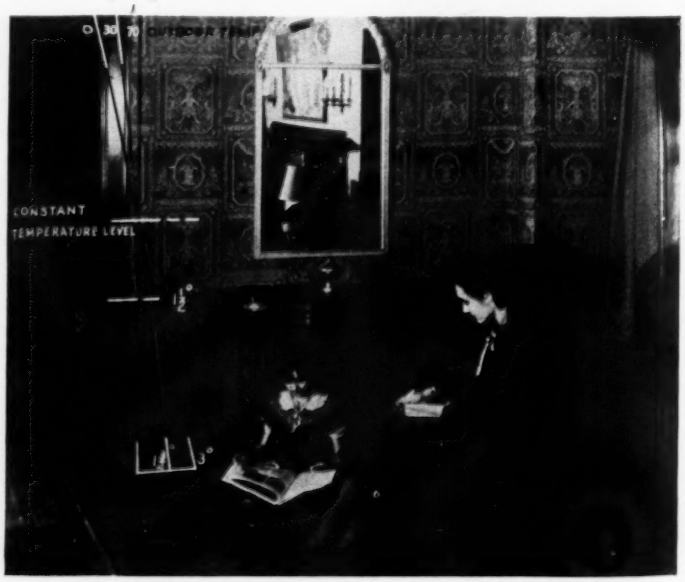


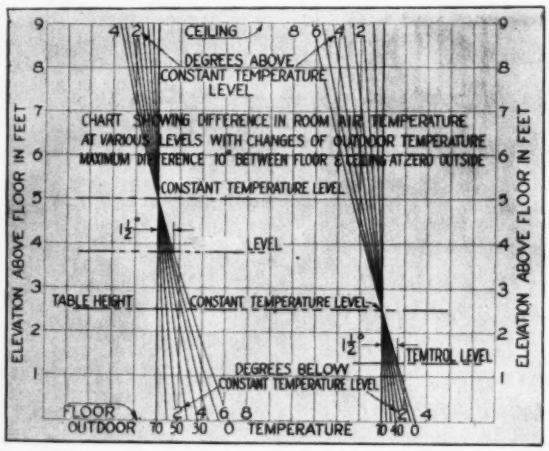
Fig. 3—"If the present practice of locating the room thermostat at eye level were to continue, even if that thermostat were able to maintain a uniform temperature at its location, still there would be wide changes in temperature in the effective temperature zone with weather changes"

Fig. 4—The illustration below shows conditions similar to those in Fig. 2, which exist in a home with smaller air temperature difference between floor and ceiling

Fig. 5—The diagram at the right points out the desirability of maintaining closely controlled temperatures in the zone between the floor and a height of 4 ft.

tain setting may be satisfactory during the day, temperatures are too low for evening hours. The thermostat setting has accordingly been moved up in the evening, or as the outdoor temperature lowers, all the time attempting to maintain a satisfactory temperature in the effective temperature zone.

Fig. 2 shows, in its left hand portion, the surprising difference in temperature which exists in many homes at table height when the room thermostat is located at a 5 ft. level and with varying outdoor temperatures.


CEILING
DEGREES ABOVE CONSTANT TEMPERATURE LEVEL
CHART SHOWING DIFFERENCE IN ROOM AIR TEMPERATURE AT VARIOUS LEVELS WITH CHANGES OF OUTDOOR TEMPERATURE
MAXIMUM DIFFERENCE 10° BETWEEN FLOOR & CEILING AT ZERO OUTSIDE
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LEVEL
TABLE HEIGHT
CONSTANT TEMPERATURE LEVEL
TEMTROL LEVEL
DEGREES BELOW CONSTANT TEMPERATURE LEVEL
FLOOR
OUTDOOR TEMPERATURE
ELEVATION ABOVE FLOOR IN FEET

The right hand portion of Fig. 2 shows the conditions which obtain when the thermostat is located approximately 2½ ft. from the floor. It will be noted now that there is considerably less difference in temperature between this point and the floor with variation in outdoor temperature. The important zone to hold at as uniform a temperature as possible is from the floor up to about a 4 ft. level since, generally speaking, such occupants as remain in a room for any length of time will be seated or lying down. Particularly in the case of young children, it is important to hold the lower part of this zone as uniform as possible. Also, the first effects of a chilly feeling move up from the floor, which means that the thermostat will turn the burner on sooner if located at a lower level.

Fig. 3 shows similar conditions which exist in a home built in such a way that the maximum difference between floor and ceiling air temperatures is about half that shown in Fig. 2.

It is obvious that more and more those who are attempting to maintain a uniform temperature and maximum comfort conditions will mount the thermostat down in the four foot zone.

This difference in the temperature of the air in a room at various levels, called stratification, must be given major consideration when thinking in terms of automatically maintaining all-time comfort conditions. The amount of stratification will vary with the type of building construction, the frequency of burner operation, the type of heating plant, etc. This stratification can be overcome one way, by the circulation of large volumes of air at low velocities. This would require fans and the use of power. The condition may be helped by a change in the method of heating, such, for example, as the heating of the floors in the home. But it is important to note that in most present homes, and in all probability in the majority of homes to be built, there will still be a great difference between floor and ceiling temperatures, in other words, stratification will exist in practically every case, and must be taken into serious consideration.

If the present practice of locating the room thermostat at eye level were to continue, even if that thermostat were able to maintain a uniform temperature at its loca-

(Continued on Page 101)

Infiltration—Its Effect on Heat Loss

By H. G. Brenner

IT has been said that the most important of all heating calculations is that of estimating heat losses. I would say then, that the most important heat loss to consider is infiltration.

Infiltration is the air that filters into the home or building around loose fitting doors and windows. Usually when a door or window sticks the carpenter is called in to remedy the trouble. In most cases he does more harm than good.

The average wind velocity in the writer's locality is

6.1 (E. Dubuque, Ill.) On the 28th-29th-and 30th of January of this year, the average velocity was 22 miles per hour, with an outside temperature of ten degrees below zero. I found it impossible to keep a certain home warm and decided to find out the cause. The following information is the result of my "research," gained from the 1932 edition of the A. S. H. V. E. Guide:

A ten-mile wind velocity, which is a safe average except in extreme conditions as mentioned above, will cause 84.9 cu. ft. of air to flow through a crack 1/16 to 7/64 of an inch wide, and one foot long, in one hour. The heat loss for this is 1.53 Btu. for one degree per hour.

The following chart gives desirable information on other velocities:

Heat Loss and Flow of Infiltration for One Linear Foot 1/16 inch to 7/64 inch Wide for One Hour

Velocity of Wind	Cubic Feet Infiltration	Heat Loss in Btu. per degree
5.0	39.3	.70
7.5	62.8	1.13
10.0	84.9	1.53
15.0	124.0	2.24
20.0	161.0	2.94

The average door or window has about 21 ft. of lineal crack. If the difference between the inside and outside temperature is 82 deg., 1.53x82x21 equals 2634.66 Btu. loss. This is equivalent to approximately 11 sq. ft. of steam radiation.

What Is Noise How Is It Measured?

To one person, the loudness of noise means one thing while to another it means something else. This article has been written for the purpose of reducing the subject of noise to a common basis

By W. O. Osborn

THE public is becoming increasingly noise conscious as evidenced by the almost universal use of helical gears and better insulated bodies on automobiles; of silent gears and rubber insulated wheels on street cars; sound absorbing materials in offices, restaurants, banks, etc.; noiseless typewriters, electric fans; and hundreds of other examples.

Sound in the physical sense is a form of energy which stimulates our auditory sense. It may be music, speech, or any of the various kinds of noise. "Noise" implies annoyance and may be defined as undesirable sound.

Ordinarily, sound is transmitted to our ears by the air, in which it occurs as a succession of waves each containing a region of compression and one of rarefaction. These waves are always the result of vibration of the sound source.

The simplest sound is known as a "pure tone" and is characterized by its frequency (pitch) and amplitude (intensity). All speech and most music sounds are complex sounds, consisting of a multiplicity of pure tones which usually bear a harmonic relation to one another. The difference between the sound of two musical instruments playing the same note is due to the difference in the overtones.

The human ear is a very intricate mechanism, the operation of which can be analyzed and explained by ordinary physical and acoustical methods. It consists of three parts, (1) the outer ear which collects the sound, (2) the middle ear which acts as a transformer, and (3) the inner ear where the sound is analyzed and converted into nerve impulses which, when transmitted to the brain, enable us to identify the sound.

EAR HAS 36 MILLION-MILLION RANGE

The analyzer elements are 23,500 rods or nerve endings on a diaphragm called the basilar membrane. Each section of this membrane is resonant to a different group of frequencies determined by the mass, stiffness, and damping of the membranes and surrounding parts. When a sound of a definite pitch is received by the ear only the nerve endings in the region resonant to that pitch are excited.

The frequency range of the average normal ear is from 20 cycles per second to 20,000 c.p.s. The barely audible sound pressure "threshold of hearing") varies

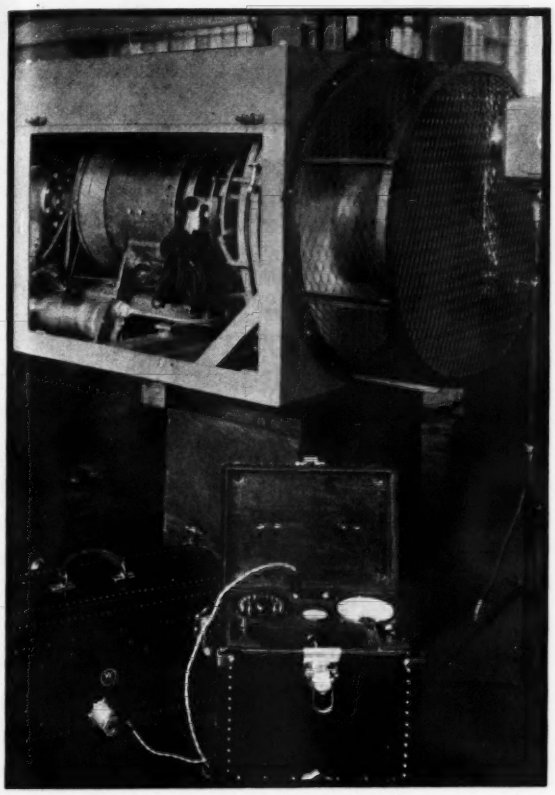

Fig. 1—This shows an experimental model of a portable noise meter set-up for making noise measurements of a railway air conditioning unit on a test floor. A microphone is used to pick up the sound waves and transform them into electrical vibrations

within these limits from 10 dynes per sq. cm. (one dyne is approximately 2 millionths of a pound) at 20 and 20,000 c.p.s. to .0004 dynes per sq. cm. at 2,000 c.p.s. The striking characteristic of the ear is the extreme range of amplitudes which are perceivable as sound. At 1,000 c.p s. the minimum audible pressure is .0005 dynes per sq. cm. and the maximum audible pressure is 3,000 dynes per sq. cm.—a range of 6,000,000 to 1. Expressed in terms of sound energy the range is 36 million-million to 1. In order to cover such an extreme range in a graph it is customary to use a logarithmic scale, the unit of which is the "decibel." It is convenient to express sound intensities in decibels since one decibel is very roughly the least perceptible change that can be detected by the ear.

WHAT IS LOUDNESS?

The loundness of any sound is defined as the intensity level in decibels (DB) of the equally loud 1,000 cycle tone. For determining the loudness of any pure tone from measurements of its frequency and intensity, the area between the curves for the thresholds of audibility and feeling has been divided by experimentally determined "contours of equal loudness." The calculation of the loudness of complex sounds is not so simple, an intricate computation based upon an analysis of the sound being required.

Obviously a meter which will evaluate the loudness or intensity of a sound will be a very useful tool. Such instruments have been developed. These meters, consist of high quality vacuum tube amplifiers which amplify the voltage generated by sensitive microphones. A calibrated meter, which measures the amplifier output, gives the intensity of the sound wave impinging on the miscrophone diaphragm. For making loudness measurements a weighing circuit is provided in the amplifier which gives it a frequency response corresponding to one of the equal loudness contours.

If the sound is complex, an analyzer is available which determines the frequencies of the various components and their relative magnitudes. An analysis of the noise of a machine often gives clues as to the parts of the machine producing the noise.

Since all noise is due to vibration, it is sometimes desirable to measure the motion of the vibrating surface rather than the sound radiated by it. A vibration pick-up has been developed for this purpose.

METER WILL NOT DUPLICATE EAR

It is impossible to design a loudness meter which will duplicate exactly all the functions and characteristics of the human ear. Because of this a meter may give a true measure of the loudness of one complex noise but be in error on other noises of a different character or intensity. On the other hand a loudness meter can be made to give quite accurate results in comparing the loudness levels of sounds of similar character.

In addition to the above precautions must be taken to eliminate the effect of standing waves, reflections, extraneous noises, etc.

Where very accurate loudness measurements are required, an analysis of the noise may be made with the analyzer and the loudness computed as mentioned above. Such refinements are seldom necessary for ordinary noise reduction problems.

Fig. 1 shows an experimental model of a portable noise meter set up for making noise measurements of a railway air-conditioning unit on the test floor. A microphone is used to pick up the sound waves and transform them into electrical vibrations. The microphone pick-up is a complete unit in itself consisting of a standard condenser transmitter, with three stages of amplification, batteries, stand and carrying case.

The noise meter essentially is a transformer—coupled amplifier of high quality with a sensitive output meter of the copper-oxide rectifier type. The meter input is provided with an attenuator having a logarithmic calibration, each step reducing the amount of attenuation by one-half or approximately six decibels.

The meter is calibrated with the microphone so that full scale deflection of the output meter, with no attenuation, is equivalent to a sound pressure at the microphone diaphragm of 0.10 dynes per sq. cm. This calibration is made with a pure tone of 1,000 cycles per second. The output meter, with no attenuation permits reading pressures as low as 0.01 dynes per sq. cm. and by means of the calibrated attenuator sound pressures slightly over 200 dynes per sq. cm. may be meassured. This wide range of pressures will include almost all noises found in practical measurements.

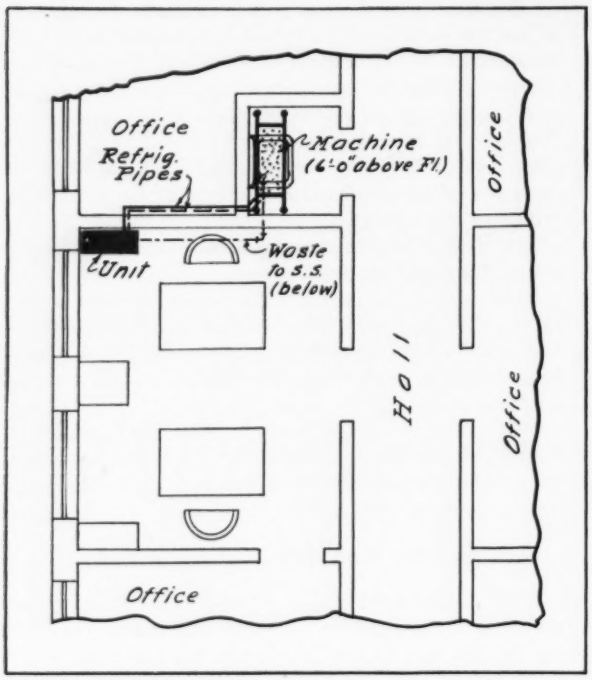

Fig. 2—The plan at the left shows the location of the conditioning unit and the refrigerating machine

Air Conditioning—

(Continued from Page 74)

where the greatest loss of heat occurs (under the windows) the spot selected for the unit might be assumed as properly belonging between the two windows.

The air conditioning unit, however, is fan operated and forcibly circulates the air in the room so that the location of the unit is not necessarily fixed by the window consideration. In fact, the air warmed at the window rises to the ceiling in summer, instead of falling to the floor as it does in winter, and it really is at the ceiling that the cold air from the unit should mix with the warmer air and become tempered before dropping back to the floor and onto the heads of the occupants.

From this it is apparent that the unit may be set in almost any location in the office and still render satisfactory service; besides the occupant has a cabinet between the windows and some other location must be used. It will be seen that the corner of the room, near the outside wall and along the same partition as that forming the wall and the slop closet, is vacant and can be utilized to provide a space for the unit location.

WATER SUPPLY FOR MACHINE

This is fairly close to the machine location and may be considered as satisfactory from both the occupant's and the operating standpoint of view. This is illustrated in Fig 1-A; while Fig. 1-B shows the probable path of the air circulation.

The water supply for the machine in all probability will not be over ½ in. pipe which may be tapped in back of the cold water faucet on the slop sink and the waste may be spilled into the slop sink over the top, the sink serving as a trapped receiver for this water. Electric service will have to be carried to the slop sink closet to operate the refrigeration machine motor and the size of the motor should be obtained from the manufacturer after the unit and machine have been selected. There also is the pan drain on the unit to be considered as this removes the water dehumidified out of the air in the room. This pan is in the bottom of the unit and, as water will not run up hill, this is carried down and spilled into a corresponding slop sink on the floor below.

There now only remains the necessity of getting the refrigerant from the machine over to the unit and back again: this may be done on the ceiling above, in the space above the ceiling dropping down in the corner of the wall to the unit, through the partition, or under the floor. If all other routes fail, the pipes could be run along the floor at the baseboard and boxed in with a small enclosure to match up with the base in color and finish. The exact size of these pipes again will depend on the refrigerant used and the manufacturer's recommendations for same.

The next problem to be considered will be that of a living room in an ordinary warm air furnace heated residence.

(To be continued)

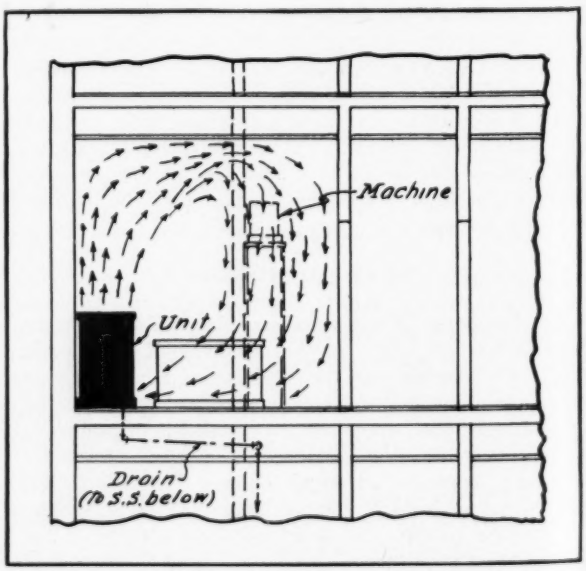

Fig. 3—This elevation indicates the probable path of the circulating air in the office

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Trouble Job—

(Continued from page 81)

load disappears when the heaters stop. When this happens, the hot water in the boiler, the hot heavy metal of the boiler itself and the glowing coals in the fire all have so much heat in them that the steam pressure walks right up even after the damper regulator shuts the draft door and opens the check door. As a result, the boiler blows off. When the heaters are controlled in four groups, one group will stop, and then another, until all four groups are shut off. In this way, the boiler load will drop in four steps instead of one, with the result that the boiler will have time to adapt itself to the changing load without blowing off."

"We will probably forget, though, to fire the boiler and we will still have cold drafts when the steam goes down."

ADDITIONAL THERMOSTAT SUGGESTED

"Then I would suggest that you put in another thermostat that will shut off all of the heaters when the steam goes down. I'll show you how in a few minutes. What other troubles have you?"

"This heater (unit heater A, Fig. 1) blows cooler air than all of the others. Will that thermostat on the pipe stop that?"

"Oh yes, I had almost forgotten about this heater. The pipe contact thermostat will help this situation when the trouble is due to lack of steam, but I believe the real trouble is caused by wet steam. You see, when steam strikes the steam pipes, some of it condenses to water. The steam supply piping is so arranged that practically every drop of water formed by steam condensing in the piping must flow through this last heater. Even the branch connection from the main to the heater slope back to the main while the main itself slopes to this last heater. Therefore, instead of being supplied with dry steam like the others, this heater receives a mixture of steam and water. No heater can give off its maximum heat when it is water-logged and, for this reason, the air leaving this heater is cooler than that from the other heaters."

"What can we do about that?"

"The water can easily be drained out of the main by means of a trap at the end of the main."

"If you correct all of these troubles, the job will be fine. How will Mr. Armstrong know just what to do?"

"I'll make some sketches to show the changes," I answered. These are shown in Fig. 3. "First we must

locate the four room thermostats. Let us locate the thermostat for the shop, office and the storage room on this solid partition inside the office," I said as I drew in the thermostat shown in Fig. 3. "In this location it will not be exposed to drafts from the large door and the warm air from the unit heater will not be blown on it. It will control unit heater A.

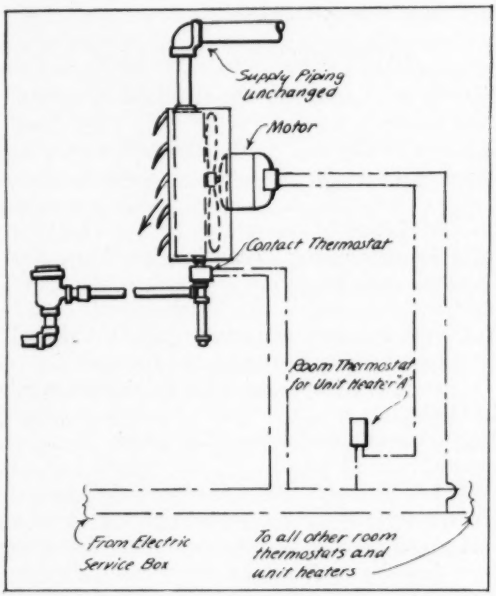
Supply Piping Unchanged
Motor
Contact Thermostat
Room Thermostat for Unit Heater A
From Electric Service Box
To all other room thermostats and unit heaters

Fig. 5—Here is a drawing of the revised arrangement for the last unit heater which was still unsatisfactory

"Unit heaters B and C heat the area near the work benches, so we will control both of them by a thermostat over the work bench. This is a warm wall, so it is satisfactory as a location for the thermostat.

"We will use the old room thermostat to control unit heater D but we will move it toward the boiler room where it will not be directly in the path of the warm air from unit heater D.

"Unit heaters E and F are off in a small separate wing so we will control both of them by a thermostat located on this wall.

"The next step is to locate the contact thermostat which will stop all the heaters when the steam fails. We want to locate this thermostat in the steam pipe which will cool off first. Obviously, the return connection from the heater which is farthest from the boiler will be the first to cool when the steam goes down. Heater A is without question the farthest from the boiler, so we will strap the contact thermostat to the return connection from this heater and before the trap. (Fig. 4). This contact thermostat will be arranged to shut off the current to all the room thermostats when the pipe temperature is 180 deg. Fahr. or lower and to supply current to all of them when the pipe temperature is 190 deg. Fahr. or higher. In other words the current will pass through this contact thermostat whenever there is steam available for the heaters and will not pass through when the steam is down. This contact thermostat must be connected in

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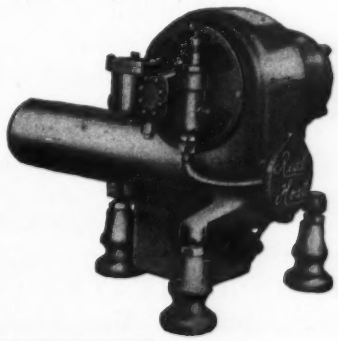

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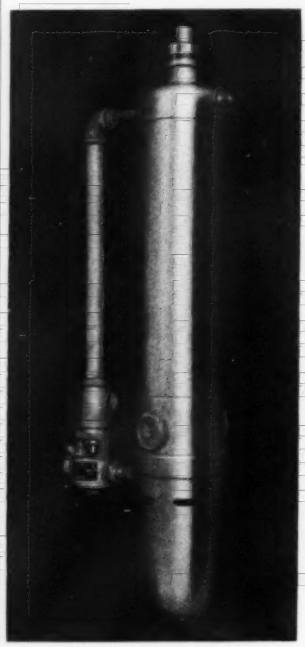

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* It saves the cost of a whole new system.

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By stressing these special features of the MOORE HEATER, you eliminate sales resistance. Your prospective customers, without technical knowledge, are quick to realize these important facts. We suggest you write today for further information and literature. You will be quick to realize the MOORE HEATER will create new business and new profits for you.

J. W. MOORE VALVE CORP.
EVERETT MASS.

the wiring ahead of all of the room thermostats. (See Figs. 3 and 4.) If you cannot get a contact thermostat having sufficient current capacity to control these six heaters. You will have to use a magnetic switch in conjunction with the thermostat. The manufacturers of the thermostat will give you a diagram of the wiring between the thermostat and the switch.

PIPING CHANGES CONSIDERED

"Now let us consider the changes in the piping to the last unit heater in the line (heater A in Figs. 1 and 3). I suggest that the end of the steam supply main be drained into the return main through a dirt pocket and a float and thermostatic trap and that the connection to the last unit heater be taken from the top of the supply main. (See new piping shown in Figs. 3 and 4). In this way we will be sure that the last heater will be supplied with dry steam. Do I make myself clear?"

"Yes," the heating contractor replied. "Should the boiler or boiler piping be changed in any way?"

"No, except to make certain that the damper regulator works freely."

"May I keep these sketches?" he asked.

"Surely."

"Well, Mr. Brown," spoke up Mr. Gayle who had not interrupted for a long time, "I'm mighty glad we know what is wrong. When can you fix us up, Armstrong?"

"In a few days. I'll order the thermostats and the other things by long distance phone this afternoon. I'll put them in just as soon as they arrive."

FURTHER DEVELOPMENTS TOLD

We shook hands with Mr. Gayle and walked back to the shop. On the way Mr. Armstrong said, "If this job works out as I think it will, my reputation is made, because Mr. Ray knows every one in town and will tell them all about it."

About two weeks later I received the following letter from Mr. Armstrong:

Dear Mr. Brown:

No doubt you will be glad to know that the heating system in the garage owned by Mr. Gayle is working much better. We installed the three additional room thermostats and the contact thermostat as you suggested. The boiler no longer blows off and the units do not blow cold air. However it seems that the units are awfully slow to start up in the morning and after they have been stopped by the contact thermostat when the steam falls. Is there anything we can do about this?

The unit heater near the shop office still blows much cooler air than the others, particularly when they first start. However this is probably due to the fact that we did not make the change to the piping in this heater. When I came to make the change, Mr. Gayle was feeling particularly broke, so he told me not to bother about this piping. As a result, the whole main is still drained through this heater which undoubtedly is the reason for its blowing cooler air.

If you have any suggestions I'll be glad to have them.

Very truly yours,
ROBERT M. ARMSTRONG.

This letter wa.. quite a surprise to me, but after reading it, I could readily see the cause of their new trouble.

Undoubtedly they had revised the wiring but had not changed the piping to the last heater, as shown in Fig. 5, so I wrote to Mr. Armstrong as follows:

Dear Mr. Armstrong:

I am glad to hear that the changes you made helped a little. However, I am very sorry Mr. Gayle did not permit you to change the piping to the last heater in the steam line because the new trouble you wrote of is caused by your not making this change.

DESCRIPTION OF CORRECTIONS

In the morning and after the steam has failed, the steam main is fairly cool. Consequently when they fire up, the cool piping condenses a great deal of steam. All of the water formed in this way flows into the last unit heater, causing it to become waterlogged. Naturally, under these conditions it is quite a while before the return connection from the heater becomes hot enough to cause the contact thermostat to supply current to the room thermostats, because before this can happen the thermostatic trap must drain away the water from the whole main. If the heater were drained by a float and thermostatic trap the water would be carried away a little faster, but I still believe that the proper solution is to leave the thermostatic trap on the heater and to drain the main through a float and thermostatic trap as I suggested. I'm afraid Mr. Gayle will never be satisfied until this is done. Yours truly,

EARL BROWN.

Mr. Armstrong showed this letter to Mr. Gayle who read it carefully and then decided to have the necessary piping change made. After this was done, the job worked like a clock. All of the heaters blow air at about the same temperature and just as soon as the steam gauge on the boiler shows a slight pressure, the heaters start. The lag has entirely disappeared.

WHAT FINALLY WAS DONE

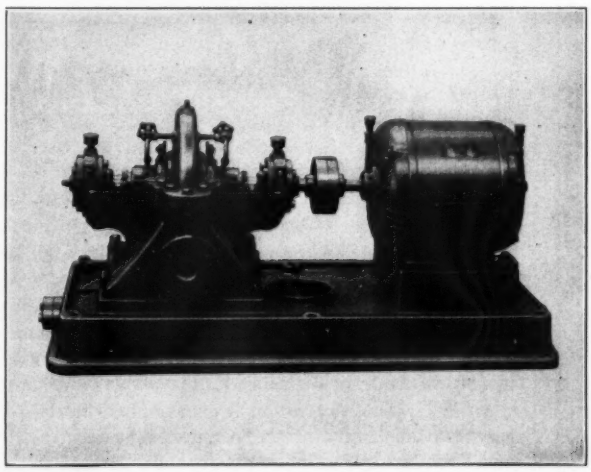
The thermostat man had a good idea. He installed a small red pilot light alongside the contact thermostat. The light burns as long as the contact thermostat is closed, but when it opens because the steam has gone down the pilot light goes out. Whenever the light goes out, they know the boiler needs attention and some one fires up without waiting for the room to cool off enough to chill them.

The owner is very well pleased to have his garage so comfortable for his men to work in.

Show Great Interest in Air Conditioning Course

The Western Society of Engineers in Chicago has been conducting a ten weeks' study course in air conditioning under the auspices of its educational committee. Forty-one students are taking the course, and such deep interest has been shown in this course that twenty-seven of them have asked to have it prolonged.

This may be taken as indicative of the general interest in the subject and points to increased activity.



Ames Double Suction Pump for General Service

AMES PUMP COMPANY, INC.
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Manufacturers of vacuum heating, condensate, centrifugal pumps, and fuel oil pumping-heating units
Division of American Locomotive Company
Representatives in all principal cities. Products manufactured and sold in Canada by Montreal Locomotive Works, Ltd.

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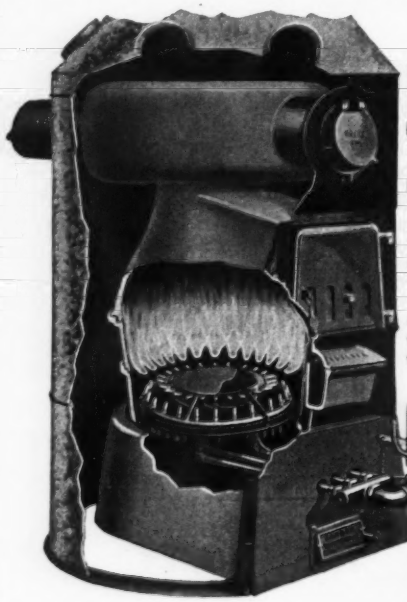
The Ames Pump Company is proud to announce the latest addition to its large group of DISTINCTIVELY DIFFERENT Pumps.

The fine qualities of design, workmanship and performance characteristic of all Ames Pumps are inherent in this newest member of the Ames Family of pumps.

NRA WE DO OUR PART

BARBER
Automatic Jet Gas
BURNERS
for
Warm Air Furnaces
and
Steam and Hot Water Boilers



Illustrating a No. 324-B Barber Automatic Burner installed in a round warm air furnace. Note the proper position of the burner; its simplicity of installation and the excellent heat-producing scrubbing action of the flame.

NRA MEMBER U.S. WE DO OUR PART

There is none better than the Barber Automatic Gas Burner and Barber Pressure Regulator for warm air furnace Gas Conversion jobs, nor for standard burner equipment for new furnaces, boilers and appliances.

Barber's line of gas burners includes specially designed equipment for warm air heating and air conditioning systems. Make it your answer to the new-day demand for completely automatic heat.

Write at once for full information—NEW CATALOG and latest ATTRACTIVE DISCOUNTS, SELLING CO-OPERATION, ENGINEERING CO-OPERATION in specifying proper arrangement of Barber Burner Assemblies for your particular requirements.

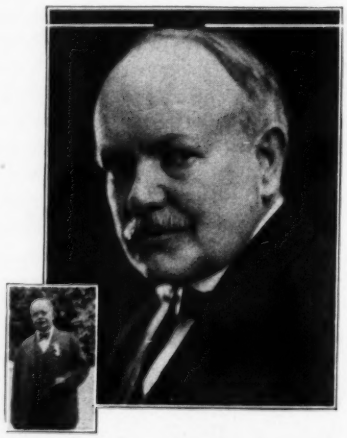
THE BARBER GAS BURNER CO.

3704 Superior Ave. Cleveland, Ohio

Dean F. Paul Anderson Called by Death

F. Paul Anderson, dean of the College of Engineering at the University of Kentucky since 1917 and nationally known in the development of heating and ventilating engineering, died in Lexington, April 8, after a long illness in his 68th year. Dean Anderson came to the university in 1891 and established engineering training as a definite part of the university. Before that time a few subjects having a direct relation to engineering were taught in the old Agricultural & Mechanical College, but there was no definitely organized engineering course. Dean Anderson built up the College of Engineering until today it is recognized as one of the great technical schools of America.

Dean Anderson was trained primarily to be superintendent of Studebaker Brothers' Manufacturing Company at South Bend, Ind., where his father had been superintendent for more than twenty-five years. In addition to training in public schools, Dean Anderson



Dean F. Paul Anderson

served four years in machinist apprenticeship. He received a bachelor's degree in engineering from Purdue University in 1890 and was a fellow at Purdue in 1890 and 1891, working under direction of Dr. W. F. M. Goss. While a fellow at Purdue, Dean Anderson developed the details of a locomotive testing plant, which was the first device of its kind for the study of the locomotive under all conditions of speed and power in a laboratory.

In 1921 Dean Anderson was appointed director of the research laboratory of the American Society of Heating and Ventilating Engineers. He spent that year away from the university, returning to Lexington once a month to keep his contact with the college. During three years, from August 1, 1922, Dean Anderson was director of this same laboratory at Pittsburgh, directing the work from his office at the university. The most important work done at the laboratory at this time was the development of the comfort zone of atmosphere, which has been accepted as the standard for air conditioning.

For three years Dean Anderson was a member of the National Research Council. In 1927 he was president of the American Society of Heating and Ventilating Engineers.

Automatic Heat and Air Conditioning Questions

QUESTIONS ON ARTICLE IN MARCH

To the Editor:

In your March issue you mentioned that the blower in the air conditioned home at Mansfield, Ohio, operates on two speeds, the high speed being under control of the room thermostat. The question that the writer would like to have answered is does the blower operate continuously 24 hours a day, and if so, is it a belt driven blower or is it a direct connected unit of the two-wheel type?

Warren, Ohio. K. S. W.

To the Reader:

Uniform temperature air is circulated through a duct system to all the rooms of the house on two fan speeds. The high fan speed is used on the heating cycle of the thermostat, while on the cooling cycle the fan drops back to the lower speed. The temperature of this air is further regulated in accordance with the heating demand as determined by the outside weather. That is, as the outside temperature becomes colder the temperature of the air circulated to the house is increased.

With reference to the fan, this is operative at the two speeds, that is, at the heating and cooling speeds, principally to furnish completely conditiond air throughout the house at all times, eliminating the possibility of stagnant air pockets and completely interchanging the air of the house for its health benefits. In this manner the fan will operate continuously 24 hours a day at either one speed or the other, in accordance with the thermostat demand.

The blower is a direct connected two-wheel unit. These fans are centrifugal units mounted on the opposite ends of the double extended blower motor shaft.

BALANCE PIPE ON HARTFORD LOOP

To the Editor:

I have read the article in the December issue entitled "What Is the Hartford Loop?" by Harold L. Alt, and note the statement that the purpose of the Hartford Loop is to prevent the water backing out of the boiler; also that the horizontal portion of the loop at the top should be made as short as possible, a close nipple being recommended, and that the top of the loop should be slightly below the water line of the boiler.

Can you inform me what would happen and why, if the top of the loop were made a longer piece of pipe, say a foot or two long? I have a case of two sectional cast iron boilers in an apartment house and each is equipped with a loop; I have just had to replace one of these boilers because it cracked and melted due to the water leaving it. When one boiler is fired harder than the other the water seems to be pushed out of that boiler into the other so that it see-saws back and forth. No one seems to be able to tell the cause of the trouble or how to remedy it.

Missouri. H. J. F.

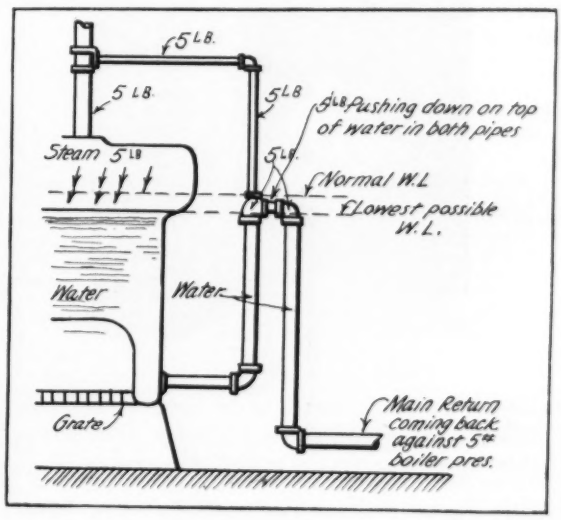


Fig. 1

To the Reader:

The reason that a short connection was recommended at the top of the loop was to do away with the space in which a mingling of water and steam would cause noise when the water line is lower than it should be and far enough down to uncover the pipe forming the top of the loop. The loop simply forms a sort of dam between the boiler water and the water in the return and all water must rise over this dam to either enter or leave the boiler. The making of the top pipe longer or shorter would not affect this dam or its effective action but it might, and probably would, result in water hammer or steam cracking at certain times when the water line is at just the right level to alternately fill and empty the pipe. Therefore, if this top pipe is shortened the likelihood of this occurring is lessened.

BROWN & BROTHERS

Seamless Drawn . . .

so that you can assure your customers of maximum safety.

COPPER...

so that you can assure them they will get clean water *always.*

RANGE BOILER

The many years' record of the Brown & Brothers Seamless Drawn Copper Range Boiler shows downright satisfaction on the part of the users.

The lady of the house likes the clean water assured by the non-rusting copper. The man of the house, even though a layman, readily appreciates the value and approves of the seamless drawn design and of the neat way in which pipe connections are made. He can understand their advantages.

Brown & Brothers Seamless Drawn Copper Range Boilers will sell. Get the details. Ask your wholesaler to get them for you.

E. B. BADGER & SONS CO.

75 PITTS STREET BOSTON

271 MADISON AVE. NEW YORK, N. Y.

If the reader had sent a sketch of his piping on both the steam and return side around the boiler it would be much easier to tell him what the difficulty is. He states that each boiler has a loop and we are wondering if each loop has its own balance pipe connected into the top of the loop and back into the steam pipe from the boiler before any valves are placed in the line. We also are wondering if our reader has any balance pipe below the water line between the two boilers which would allow the water from one boiler to pass over into the other in the case of any unbalanced pressures.

When the loop is properly piped and installed the result of excessive pressure on one boiler and not on the other is to force the water out of the boiler with the higher pressure and over into the boiler with the lesser pressure; with the top of the loop slightly submerged this actually happens down to the level of the top pipe of the loop (usually one or two inches) and then the water uncovers the loop and the steam forces back the returns in the return main but not the water out of the boiler--that is, it will not force the water out of the boiler below the top of the loop. See Fig. 1.

OIL HEATING PROBLEM

To the Editor:

Having been a subscriber for your journal for over ten years, I am wondering if you would be kind enough to give me a reply to my enclosed problem.

I have a one pipe steam heating system, using an oil burning boiler, with ample size circuit and branches to radiators. There is a vacuum valve on each radiator and quick vents on the return lines.

I find that the water leaves the boiler, only at certain times and conditions, and then the low water cut-out throws the burner off. The burner then stays off with no heat in the house until the water returns to the boiler.

No doubt you will say that the boiler and system is dirty but I have had this cleaned out with compound and also have had it blown off top and bottom eight times, so that the water is clean enough to drink.

Here is my version of the job. The thermostat is set at 70 deg. Fahr. throughout the day while at night it is cut down to 60 deg. Fahr. and when the whole system is cold the burner cuts in and condensation builds up in the circuit thus the low water cut-out stops the burner. It is my opinion that there is only a ½-in. leeway between the proper water line and the low water line. What is your opinion of this arrangement?

Now if you will notice this job is in a real old residence with the cellar only 10 ft. by 10 ft., the remaining part of the foundation around house is about 12 in. to 18 in. above the ground which is just room enough for a person to crawl through.

All of the mains and returns are covered and are well pitched. I will agree that the foundation is not as tight as it should be. Therefore, there is more chance for condensation.

In your good judgment do you think that a separate 1½-in. drip pipe from the center of the main circuit, run back to the boiler, would correct the job?

Mass. K. A. P.

To THE READER:

Insomuch as a specific make of oil burning boiler was mentioned in this instance by the correspondent, as being included in this installation, the inquiry was forwarded to the manufacturer's engineering department with the idea that they may have some special recommendations regarding their equipment. Their reply is as follows:

To THE READER:

It is impossible for us to determine the exact difficulty with this installation without actually seeing it and checking various conditions, but we are making a few suggestions which may help in solving the problem.

This installation is in a rambling residence with only a small excavated space in the basement for the boiler. The rest of the space underneath the house is unexcavated and well vented so that the air surrounding the piping is at times at a very cold temperature. The trouble seems to be that at times, perhaps during the morning pick-up, the condensate from the steam in the line and radiators fails to return to the boiler fast enough to prevent the boiler from tripping out on the low water cut-out. The correspondent states that all of the mains and returns are well covered and well pitched, but this should be one of the first things to check. It is particularly important that all of the mains and the branches are well pitched so that the water will not be pocketed anywhere. It is also important that the supply valves on the radiators fit tightly, so that when a valve is shut off, no steam can gradually leak through to the radiator and gradually fill the radiator up with condensate.

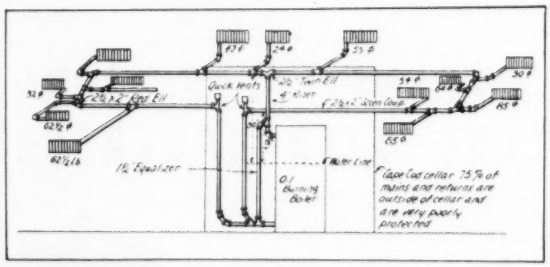

Quick Vents
1½ Equalizer
Oil Burning Boiler
Water Line
Close Cut cellar 75% of mains and returns are outside of cellar and are very poorly protected

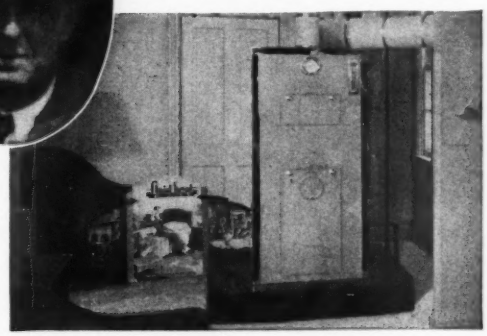
Fig. 2

The correspondent is of the opinion that there is only about ½ in. difference between the proper water line and the low water cut-out point. On all our boilers there is about 2 in. of difference between the normal water line and the trip-out point. Also, at this point in the boiler, 1 in. in height represents about 3 gallons of water. On a second size of boiler, 1 in. in height represents about 2½ gallons. This means that about 5 or 6 gallons of water must be trapped somewhere in the piping system, before the boiler can trip out on low water.

It may help somewhat on this job if the pipes are particularly long and badly exposed, if the water line on the boiler is carried about 1½ in. higher. This will give about 3 or 4 gallons additional capacity and may prevent trip-out under extreme conditions.

Of course, it is possible that some other condition besides low water may be causing the oil burner to stop at times. This matter should be investigated.

Meet Mr. Don P. Hobbs, Manager of the Morton Oil Co., Malden, Mass., who introduced Fluid Heat Oil Burners into a new territory and installed 130 in the first nine months.



"Starting from scratch I sold 130 Fluid Heats the first 9 months"

. . . says Don P. Hobbs

"And 40 of these sales came from satisfied users—in a section that had never before seen a Fluid Heat Oil Burner!"

ARE you getting 30% of your new *sales* from enthusiastic leads supplied by people for whom you have installed an oil burner? If not, then mail the coupon below and learn how. Remember—30% was this Fluid Heat Dealer's average for his first nine months—in a cold territory! He won't stop there. He'll pyramid that 30% year after year. Every three installations will mean an extra sale dumped right in his lap.

Mr. Hobbs says: "People became enthusiastic about Fluid Heat's freedom from trouble. They were amazed at how low their fuel bills were. Almost every person to whom I sold a Fluid Heat Burner turned around and tried to sell someone else for me. And a lot of those leads from satisfied customers turned into sales. We sold five burners from one Fluid Heat installation, and four from another. Of the 130 Fluid Heat purchasers, there isn't a single dissatisfied customer. Three salemen did the job!"

There's not room here to explain how Fluid Heat's *Rotary Wall Flame*, *Flameflex* and other features keep customers' fuel costs and dealers' service costs amazingly low. There's not room to tell why Fluid Heat users actually go out and try to sell Fluid Heat Burners to their friends, relatives and neighbors. But you can get all the facts by mailing the coupon below. Learn (without obligation or cost) why Fluid Heat will pyramid your oil burner profits. Mail the coupon—NOW!

fluid heat
OIL BURNER
Conversion Burners Oil Burning Boilers

MAIL THIS COUPON NOW

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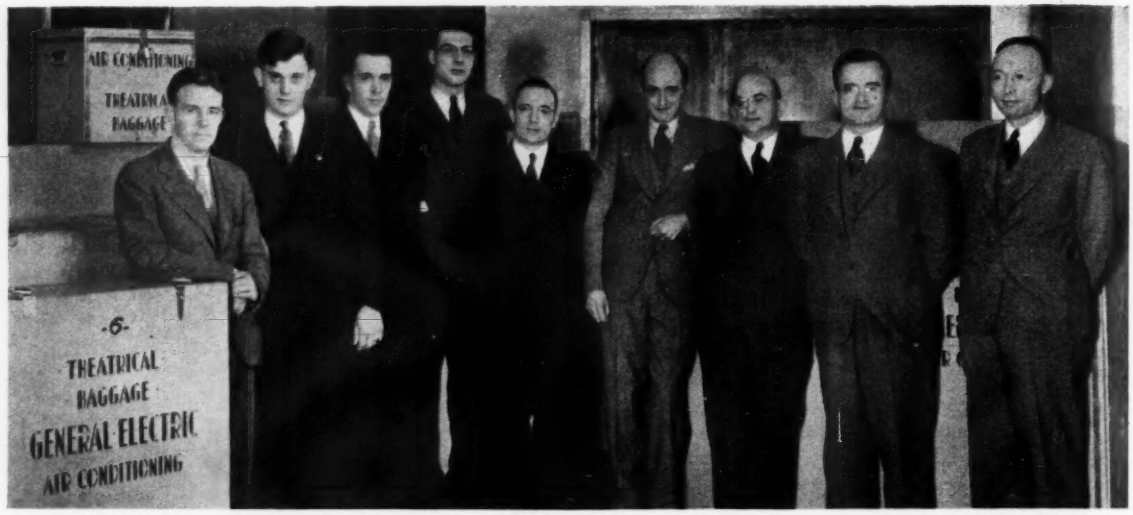
6805 Eastern Ave., Baltimore, Md.

I'm interested. Send me the facts telling how we can make more money selling Fluid Heat.

Name.....

Company.....

Street Address.....*City & State*.....



Participants in dealers' sales programs, left to right: W. A. Bowe, advertising manager; R. S. Thurston, air conditioning sales; E. C. Lewis, new construction; W. A. Scherff, oil furnace sales; A. C. Roy, merchandise promotion; E. D. Harrington, commercial engineering division; H. B. Smith, gas furnace sales; J. J. Donovan, manager; E. J. Opal, merchandising manager.

General Electric Holds Dealer Meetings

The General Electric Co., air conditioning division, New York City, held a series of 2-day dealer sales meetings in April. The plan was unusual, both because of its size and because direct contact was established.

These meetings were held in Boston, Schenectady, N. Y., New York, Richmond, Va., Philadelphia, Cleveland, Chicago, Minneapolis, Omaha, Kansas City and St. Louis. Dealers and sales managers discussed policies with the sales and advertising representatives of the air conditioning department on the first day. On the

THE BOOK THAT CLOSES SALES ON THE FIRST CALL!

Correct Preparation Planned Approach

THE secret of quick sales is thorough preparation. Using the Wayne "Coalitosis" Book provides intimate knowledge of the prospect's heating plant *before* the sales interview. And it shocks the buyer into action when you call. *Write today for more information.*

Wayne Oil Burner Corp.
602 Glasgow Ave.
Fort Wayne, Indiana

WAYNE THE WORLD'S FINEST OIL BURNER..

WATER HEATER NEWS

STEAMFITTERS' TIME CUT WITH GENERALS

General Water Heaters are now being installed in one or two hours' less time than other heaters on the market.

Features which, when taken together, allow this to be done, are:

1. Boiler connections on end—allow heater to point directly toward storage tank; less pipe and fittings —less threads to cut.
2. Octagon boss for strong wrench grip—costly slips and broken corners stopped.
3. Heavy copper coil expanded directly into shell—can take rough treatment.
4. Extra tapped hole for aquastat.

Local wholesalers are now giving complete information about this.

GENERAL HEATERS

SELL QUICKER — INSTALL QUICKER — HEAT QUICKER

THE GENERAL FITTINGS CO.
100 BAKER ST. PROVIDENCE, R. I.

second day, all salesmen of dealers attended a dramatic presentation of the promotional plans. Products, advertising, and sales promotion were staged with scenery, skits and effects. Seventeen pieces of theatrical baggage weighing two tons were used. These meetings were an extension of the company's dealers' and salesmen's training program.

At the regional meetings, the air conditioning department was represented by J. J. Donovan, manager; E. J. Opal, merchandising manager; W. A. Bowe, advertising manager; E. D. Harrington, engineer, commercial engineering division; A. C. Roy, merchandise promotion; W. A. Scherff, oil furnace sales; R. S. Thurston, air conditioning sales; H. B. Smith, gas furnace sales; and E. C. Lewis, new construction.

Controls—

(Continued from Page 87)

tion, still, there would be wide changes in temperature of the Four Foot Zone as the weather changes, see Fig. 4. Since it is in this zone that constant temperature is desired, and since the thermostat can only control at or near its location, it follows that the thermostat must be located at or below the average level of the effective temperature zone for maximum comfort. Refer to Fig. 5.

Comparing Figs. 2 and 3, it will be apparent that there is less drop in air temperature at table height when the outside temperature changes from 70 deg. Fahr. to 0 deg. Fahr. in the building which shows only 10 degrees difference between floor and ceiling levels at zero outside temperature than where there is 20 degrees difference. Thermostats of the anticipating type including those employing supplementary heat or a mechanical means of obtaining frequent burner operation, which function with no change or a decrease in room temperature, control at a somewhat lower level than the thermostat setting, in extreme weather. Therefore, this influences the location of the thermostat in the Four Foot Zone, requiring a lower location for those houses which show a less difference between ceiling and floor than with those that show more nearly 20 degrees.

Let us assume that the room temperature is maintained by a thermostat of the anticipating type, 1½ degrees below the thermostat setting in zero weather. In order to compensate for this so that at any given level below the thermostat location the change in air temperature with outdoor changes will not be increased by this amount but will only be the change due to stratification, the thermostat should be mounted below the level where constant temperature is desired. The distance below the constant temperature level is determined by the maximum spread between ceiling and floor for any particular installation. In Fig. 2, the maximum is 10 degrees. Here 1½ degrees below the control level for zero weather is about 14 inches, while in Fig. 3 it is only about 7 inches.

This is difficult to understand, but the practical application of this information is that when applying thermostat to homes of better construction, wherein the stratification of air is less marked, the thermostat must be mounted lower than in homes of poorer construction and where the type of heating plant and other conditions allow greater stratification of the air.

There can be no compromise in "GENUINE DETROIT" precision
MEASUREMENTS, which make a hair seem the size of a cable, are not uncommon in the precision manufacture of "Genuine Detroit" products.
But no matter how fine the measurement, there must be no deviation from accuracy. Too much depends upon precision to make "Genuine Detroit" satisfied with anything less than exact dimensions.
It means more than merely "splitting hairs". It means the reason why so many people know that "Genuine Detroit" controls are accurate and dependable. It is one of the reasons that many "Genuine Detroit" products built 50 years ago are in continuous service today
DETROIT LUBRICATOR COMPANY
DETROIT, Mich., U. S. A.
Canadian Representative: Railway & Engineering Specialties, Ltd., Montreal, Toronto and Winnipeg
"GENUINE DETROIT"
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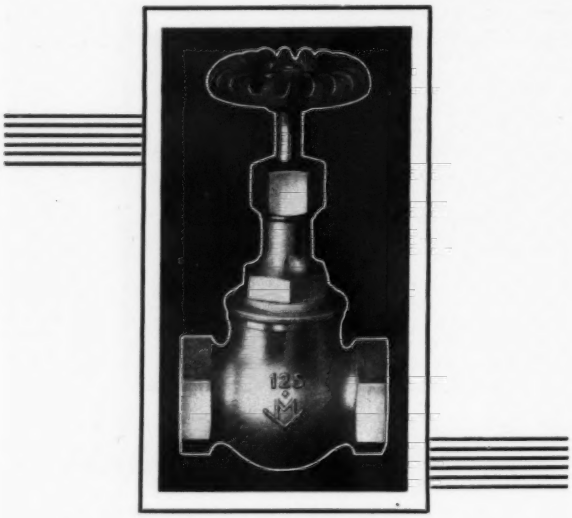

THE IMPROVED
"MILWAUKEE"
No. 501—125-lb. S. W. P. JENKINS TYPE
GLOBE VALVE

SCIENTIFICALLY DESIGNED
ACCURATELY MACHINED
BEAUTIFULLY FINISHED

These outstanding features immediately identify this *The Finest Valve of Its Type Ever Made*

1—Engineered by "MILWAUKEE." 2—Made of the highest grade steam Bronze from virgin ingot metal. 3—Has highest grade swivel interchangeable Jenkins type disc. 4—The highly polished bonnet adds a finishing touch to the finer general appearance of the valve. 5—When closed ample threads on the stem are in contact with those in the bonnet to insure utmost strength and safety in service. 6—Has a heavy pattern stem made of special mixture Bronze. 7—The best grade of graphited asbestos steam packing is used. 8—Stuffing Nut is sufficiently heavy to withstand the most severe strains. 9—May be repacked under pressure when wide open.

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OFFICES IN 26 PRINCIPAL CITIES

MILWAUKEE VALVE COMPANY
MILWAUKEE WISCONSIN

Manufacturers of
"Milwaukee" Heating Specialties
"Milwaukee" 'Approved' Bronze Valves
"Milwaukee" Valves and Fittings for the Oil Industry.

Preliminary Program for the H. P. A. C. C. N. A. Convention

The Heating, Piping and Air Conditioning Contractors National Association has issued a preliminary program for its forty-fifth annual convention, which is to be held May 22, 23, 24 and 25 in Atlantic City, N. J., with headquarters at the Ambassador Hotel. This program is as follows:

Saturday, May 19

9:00 a. m. Meeting of Executive Committee of the Board of Directors.

Monday, May 21

9:00 a. m. Meeting of Board of Directors.

Meeting of Association Managers' and Secretaries' Conference.

Registration of Members and Guests.

Tuesday, May 22
Morning

9:00 a. m. Opening Session—Everybody Welcome.

Sing "America."

Address of Welcome—The Hon. Harry Bacharach, Mayor of Atlantic City.

Welcome to New Jersey—Harry Geiser.

President's Address—Robert D. Williams.

Appointment of Convention Committees.

Convention Photograph.

Report of Treasurer—John H. Zink.

Report of Auditing Committee.

Address—"The National Recovery Program"—Major George Berry, Divisional Administrator, National Recovery Administration.

Report of Secretary—Joseph C. Fitts.

Address—"Labor and the Recovery Program"—John Coefield, President, United Association of Journeymen Plumbers and Steam Fitters.

Report of Educational Director—Dr. S. Lewis Land.

Address—"The Construction Code and Its Administration"—Stephen F. Voorhees, Chairman of the Construction Code Authority.

Discussion of Code Situation.

Afternoon

2:30 p. m. Meeting of Divisional Code Authority.

Wednesday, May 23
Morning

9:00 a. m. Call to Order.

Report of Membership Committee—

Eastern Division—William J. Olvany, Chairman.

Central Division—M. J. Chagnard, Chairman.

Western Division—Paul E. Werner, Chairman.

Discussion of Reports.

Report of Committee on Standards, George P. Nachman, Chairman.

Discussion of Report.

Address—"Convector Radiators"—Speaker to be announced.

Report of Committee on Air Conditioning—J. Lawrence DeNeille, Chairman.

Discussion of Report.

Address—"Air Conditioning in 1934"—Speaker to be announced.

Report of Committee on Welding—John H. Zink, Chairman.

Discussion of Report.

Report of Sub-Committee on Boiler Output—Harry M. Hart, Chairman.

Discussion of Report.

Afternoon

2:30 p. m. Meeting for discussion of Regional, State and Local Code Administration.

Entertainment for Ladies.

Thursday, May 24
Morning

9:00 a. m. Call to Order.

Papers by Members of Association Managers' and Secretaries' Conference.

Report of Committee on Trade Promotion—Walter Klie, Chairman.

Discussion of Report.

Report of Committee on Certified Heating—C. P. Finke, Chairman.

Discussion of Report.

Address—"Selling Modernization in 1934"—Speaker to be announced.

Report of Divisional Code Authority.

Discussion of Report.

Evening

7:00 p. m. Dinner Dance—Ambassador Hotel.

Friday, May 25

Morning

9:00 a. m. Call to Order.
Report of Committee of Ten—Coal and Heating Industries—Harry M. Hart.
Discussion of Report.
Report of Convention Committees.
Election of Officers.
Unfinished Business.
New Business.
Adjournment Sine Die.

Announces Big Heating Drive

A three and one-half months' nation-wide heating modernization campaign will be opened this month, with the American Radiator Company acting as sponsor to supply dealer aids for the drive.

Every established heating contractor in the United States will be urged to join in the movement, the keynote of which will be an effort to create business for the contractor and a greater interest in good heating, rather than an effort to sell any particular piece of equipment, according to Arthur R. Herske, vice-president and general manager of sales for this company.

"With modernization work in the building industry receiving increasing attention in governmental efforts to promote recovery," said Mr. Herske, "our purpose will be to aid the heating contractor to provide better living conditions. Small changes in heating systems that the contractor can make with only a minimum of new equipment will be urged just as strongly as will changes where a large amount of equipment is required, where those small changes will provide the necessary improved living conditions."

In the drive, literature and other aids provided to the dealer will stress his name rather than that of the manufacturer. A pictorial presentation booklet for personal contacts, window posters, truck signs, an outline for telephone selling, newspaper advertising mats and publicity stories for use in local newspapers to create a greater interest in good heating, will be supplied by the American Radiator Co. to all heating contractors who participate in the campaign. Two mailings of literature will be made by the company in the dealer's name.

In addition, the contractors will receive a survey form to be used in surveying heating plants to determine what if any changes are needed in them, a proposal form to be used in submitting the results of the survey to the home owner and prospect cards to be used in keeping a record of the results of solicitations.

Developing the cold zone theme used in its national advertising and in the special aids for the modernization campaign, the company lists the causes, of cold zone as seven. These seven, termed in the advertising literature the "Seven Secret Sins That May Beset a Heating Plant," are defined as improper fuel, improper firing, poor draft regulation, defective air or radiator valves, need of cleaning, insufficient radiation or undersized boilers, and antiquated heating equipment.

Correction of any one of these, even the smallest, may remove difficulties that have been experienced with the heating system, the literature for the campaign points out, urging that a heating contractor be allowed to diagnose the cause of the difficulty.

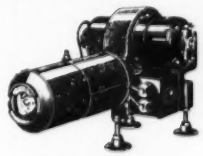
Look Over Your City's Sky Line

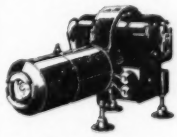
EXCELSO
QUALITY WATER HEATER

Sales are everywhere in view

MAKE CALLS—
Orders Will Follow

EXCELSO PRODUCTS CORP.
57 Clyde Avenue Buffalo, N. Y.
or
Ask Your Jobber


16 - 20 Gals. per hr.


8 - 10 Gals. per hr.

3½ - 4½ Gals. per hr.

2 - 3 Gals. per hr.

1¼ - 2 Gals. per hr.

Master Kraft
OIL BURNER
Now 5 MODELS

A size for
EVERY HOME
and POCKETBOOK

The biggest money-making sales proposition in the oil burner field—a capacity for every size installation from the small cottage to large industrial buildings. A price for every heating budget. Records prove fuel savings up to 76%. Installations as far west as Colorado. Unusual inquiry-getting advertising campaign. Fullest factory cooperation. Write today for 1934 Master Kraft Profit Plan.

Harvey-Whipple, Inc.
57 Emery St., Springfield, Mass.

Dealers of Iron Fireman Mfg. Co. at 1934 Convention

Iron Fireman Holds 1934 National Dealer Convention at Cleveland

The Iron Fireman Manufacturing Company held its 1934 national dealer convention in Cleveland the week of March 26-31. More than 400 dealers and salesmen from the United States and Canada were in attendance—the largest convention group ever assembled in the history of the company. The convention proper included a two-day program on sales and advertising plans and policies for the year, held at the Hotel Cleveland Monday and Tuesday, March 26 and 27, and at the Iron Fireman Cleveland plant, where the 1934 models were on display. For the balance of the week dealers and salesmen were in attendance at a mechanical school at the Cleveland factory.

The keynote of the convention was the slogan, "More in '34," and the entire session was devoted to a 1934 factory and dealer program, the objective of which is increased sales for the entire Iron Fireman line.

In 1933 more of the company's automatic coal burners were sold than in any previous year of the company's eleven years' history, and opinions expressed at the convention by factory officials and dealers is that 1934 sales should show a further increase.

The Iron Fireman Manufacturing Company has factories in Portland, Oregon; Cleveland, Ohio; Toronto, Canada. Factory branches are maintained in New York, Chicago, Milwaukee, and St. Louis. The company has more than 800 dealers in the United States, Canada, and foreign countries.

CASH-ACME
IT'S AUTOMATIC

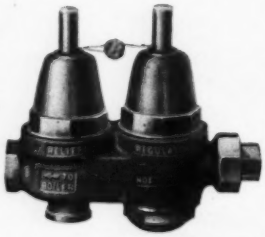
You Can Depend

on

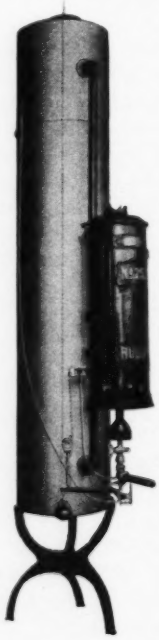
Cash-Acme Automatic Pressure Controls to Give Satisfaction—

The New Types CA and CB Cash-Acme Pressure Controls have every feature needed to give *long service* without frequent service calls.

They operate equally well on *coal*, *gas*, or *oil* fired boilers—There is no finer hot water heating Control built than the new Cash-Acme Unit. Ask your jobber for information or write us for Bulletin D1—



A.W. Cash Valve Mfg. Corporation
600 NORTH WATER STREET
DECATUR, ILLINOIS



A New Control

The E-Z-Lite Gas Water Heater Control is automatic in operation — the tank cannot be overheated —you cannot waste gas. Manually operated which eliminates complicated wiring and reduces installation costs. Easily installed — it replaces a fitting in the present heater installation — No new piping is required. Wall panel is located at convenient point in upstairs room. Low in cost. A big market is waiting for this new control. Write for prices and information.

AUTOMATIC PRODUCTS COMPANY
121 N. BROADWAY MILWAUKEE, WIS.

Products FOR Dealers

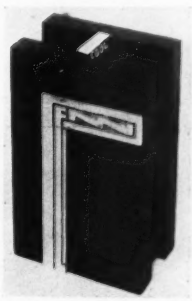
This section gives a report of the latest news of selected automatic heat and air conditioning products. The general new products section starts on one hundred twenty-three.

New Temperature Control for Low Mounting

Here is a temperature control device which has just been placed on the market for low mounting either at the baseboard or within what is described as the effective temperature zone—that space from the floor up to a level of 4 ft. It has been designed with the idea of preventing overrun in automatic heating both when the system is started up from a cold condition and when the heating equipment is turned on to maintain the desired temperature. Also, it is designed to prevent underrun which results from long standby periods. These periods allow the heating plant and its distributing system to

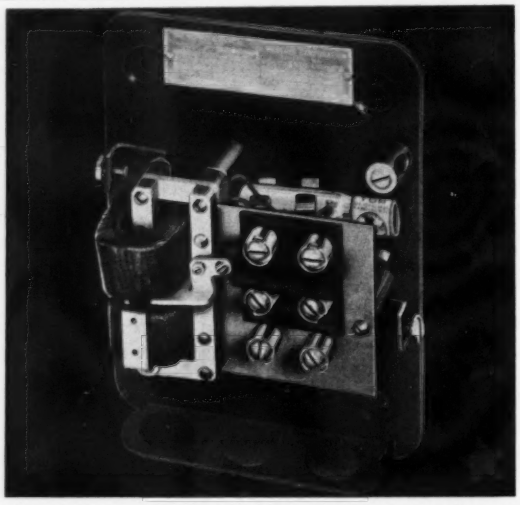
become cool so that when the burner starts at the demand of the thermostat it takes so long to again increase the temperature of the room that an underrun of room temperature results. This thermostat is designed to prevent overrun by turning the burner off soon enough. It also is designed to eliminate underrun by operating the heating plant at frequent intervals. This equipment is further described in another way as being a time control varied by the trend of room temperature. This is brought about by converting the heat of the normal current in the thermostat circuit. When the thermostat drops to a certain temperature, depending upon the thermostat setting, the contacts are closed and after the element temperature is increased by a definite amount, the contacts are opened. Once the contacts have been closed, to start the burner, the normal current flow through the thermostat parts is converted into heat to increase their temperature. If the room temperature during this cycle remains constant or tends upward, the element will reach the temperature at which the contacts open in a comparatively short time. This stops the burner. Heat input to the thermostat parts then ceases. The element then cools to the temperature at which the contacts close. The rate at which the element loses or gains temperature is dependent upon the trend of room temperature. As the weather becomes colder quite naturally the burner has to run a longer period of time to maintain a constant temperature. Since the room temperature tends upward in severe weather it takes a longer time for the temperature of the element to reach the opening contact point, allowing longer burner operation. Also, the element cools off at a more rapid rate thus shortening the standby period. Thus this new thermostat is designed to maintain a uniform temperature at or near its location by starting and stopping the burner as the result of the temperature rise of this element, modified by the actual room temperature and the rate and direction of its change.

In what is known as day-night service, this new thermostat which is maintained at a temperature slightly above the surrounding air is designed to open the con-



tacts and stop the burner during the morning bringing-up period much sooner than it would if it were dependent upon increase in temperature from the air in the room. It has been made to be influenced to a minimum extent by the effect of the cold wall on which it is mounted. As indicated by the smaller of the two accompanying illustrations, the adjustment for temperatures is on top, and because a low mounting may invite tampering by children, this adjustment is not readily changed. Neither is it

M·E·R·C·O·I·D
LOW VOLTAGE TRANSFORMER-RELAY



This device is in principle a low voltage transformer, but also operates as a repulsion relay. It is adaptable for many applications requiring a thoroughly dependable remote control. • Quiet in operation. Equipped with a mercury switch. Write for Bulletin No. 110.

Mercoid Controls Are Distributed and Stocked In Many Cities By The Graybar Electric Co., Inc.

THE MERCOID CORPORATION
Sole Manufacturers of The Mercoid Switch
4217 Belmont Avenue • • CHICAGO, ILL.

The Ohio Brass Company
Mansfield 1677 Y Ohio

easy for the cover to be removed. This new type thermostat has been made so as not to require a location where air circulation is good, with the result that it is suitable for mounting in out of the way places where it can be protected by furniture if desired. The structure of the device has been made with the idea of preventing damage which might result from normal household usage. Penn Electric Switch Company, of Des Moines, Iowa, is the manufacturer.

Small Burner Uses Heavy Fuel Oil

Announcement has just been made of a new oil burner which has been designed for burning the heaviest fuel oils and which has been made especially suitable for small homes, 4 rooms and up in size. The electric motor operates in a vertical position as shown by the accompanying illustration and is mounted on an upright support. It uses ball bearings. The end plate of the motor is attached to a sump designed to be always partly filled with oil. In this sump and directly operated at motor speed, is a rotary air compressor and a piston type valveless oil pump. The oil and air mixture is delivered through ½-in. copper tubing to the spray nozzle head,

which head is mounted in a special casting held by set screws applied to the fire door of the furnace. The burner is designed to be applied to any existing heating plant. As for its installation, it is pointed out that a few broken firebrick are thrown on the grates, and the nozzle head support plate is attached in the firedoor opening. After the nozzle head support is secured in place, a sheet metal cover fits onto the support place and is held by screws to cover the entire door opening after which the nozzle head and transformer are attached. This unit is designed to burn small quantities of fuel, even down to 1 qt. of oil an hour if desired. Scott-Newcomb, Inc., 1935 Pine St., St. Louis, Mo., is the manufacturer.

Small Refrigerating Units Added to Line

An announcement of new and improved refrigerating units to round out a line of commercial refrigerating and air conditioning equipment has just recently been made. These new units are in smaller sizes, namely ¼, ⅓, ½, and ¾ h. p. They are described as being particularly adapted to refrigerating and air conditioning equipment in residences, restaurants, offices, retail stores, hospitals, banks, and commercial uses. As for the mechanical

CHASE ALL-COPPER WATER HEATERS DON'T LOSE THEIR HEATING POWER BECAUSE THEY'RE NOT LIKELY TO BECOME CLOGGED WITH SEDIMENT

CHASE

AIR CONDITIONING
CONTROLS

for
Domestic or Commercial Installations

MINNEAPOLIS-HONEYWELL Air Conditioning Controls govern all phases of this work, including heating, cooling, ventilating, humidifying or dehumidifying. There are controls for every application, each designed to accomplish its particular function with characteristic Minneapolis-Honeywell accuracy and efficiency. Minneapolis-Honeywell Regulator Company, 2801 Fourth Avenue South, Minneapolis, Minn. Branch and distributing offices in all principal cities.

Humidity Control. Very accurate, with exceptionally small differential. Range 20 to 80 per cent relative humidity . . .

MINNEAPOLIS-HONEYWELL
Control Systems

ATTENTION!

Are you taking full advantage of the opportunities offered to you by DOMESTIC ENGINEERING?

Do you use regularly the departments organized to help you in handling any problem you encounter in your business?

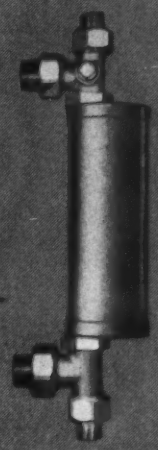
If you do, then you already know the great help that is derived from a subscription to DOMESTIC ENGINEERING. If you do not, we invite you to get in touch with the editorial department the next time you are stumped.

You can get help regardless of what your problem may be. You can get help on technical problems, merchandising, legal matters, buying information, any thing that comes up in your everyday business. And your inquiries are handled by outstanding authorities in your industry.

If you use this reader's service, then you are one of the satisfied readers of DOMESTIC ENGINEERING. If you don't, then we suggest that you use this service the next time you have a problem, difficult to solve. And use it as often as you please.

DOMESTIC ENGINEERING
1900 PRAIRIE AVE., CHICAGO

For all the interesting facts about this different heater, send the coupon



CHASE

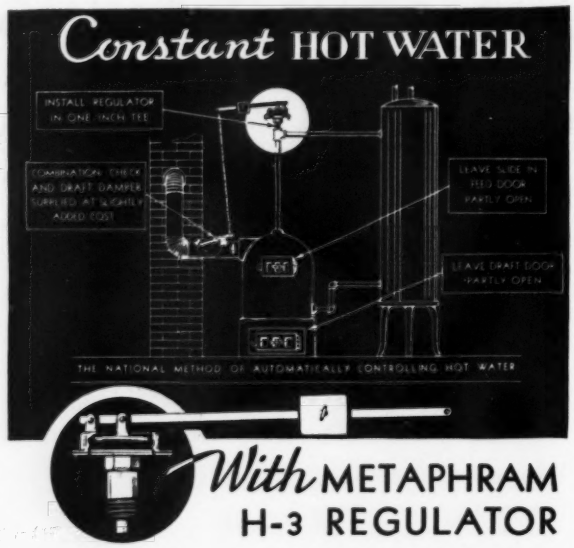
CHASE BRASS & COPPER CO.
— Incorporated —
Heating Products Division
Waterbury, Conn.

CHASE BRASS & COPPER CO.,
Heating Products Division,
Waterbury, Conn.

Gentlemen: Please send me the full story on Chase Copper Water Heaters.

Name.....

Address.....


Constant HOT WATER
INSTALL REGULATOR IN ONE INCH TEE
COMBINATION CHECK AND DRAFT DAMPER SUPPLIED AT SLIGHTLY ADDED COST
LEAVE SLIDE IN FEED DOOR PARTLY OPEN
LEAVE DRAFT DOOR PARTLY OPEN
THE NATIONAL METHOD OF AUTOMATICALLY CONTROLLING HOT WATER

With METAPHRAM H-3 REGULATOR

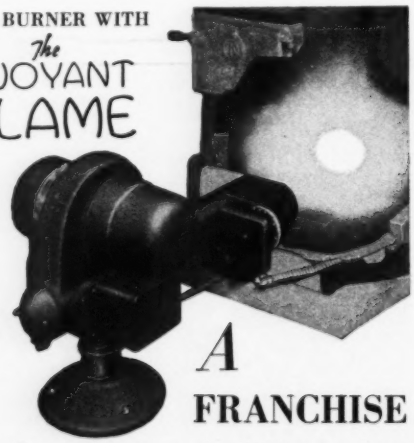
Expressly Designed for Tank Heaters

Note this installation diagram. It is the short cut to satisfactory regulation of domestic hot water supply with *any* type of hand-fired tank heater. All connections are free from interference, and there can be no backing up of coal gas into the house or introduction of flattening air into the combustion chamber. The H-3 regulator is so low in price that any home owner can afford it. Yet it offers the sensitive and gradual control that you have always associated with Metaphram Regulators.

NATIONAL REGULATOR CO., 2317 KNOX AVE., CHICAGO

BETTENDORF ★

THE BURNER WITH *The* BUOYANT FLAME



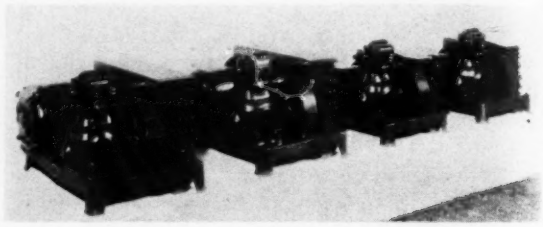
A FRANCHISE

You've been waiting for

WHAT a burner, this Bettendorf Econ-Omatic! Superbly engineered — splendidly designed along clean cut, modern lines—the quietest of all high pressure burners—longer lived—utterly dependable—in the medium price bracket yet unsurpassed at any price. We back our dealers with a powerful Help-The-Dealer-Sell Plan that spells REAL RESULTS in SALES and PROFITS. Join our bid for Bettendorf leadership and dominate your local market. Write or wire us today for complete information. THE MICRO CORPORATION, *A SUBSIDIARY OF THE BETTENDORF COMPANY*, BETTENDORF, IOWA.

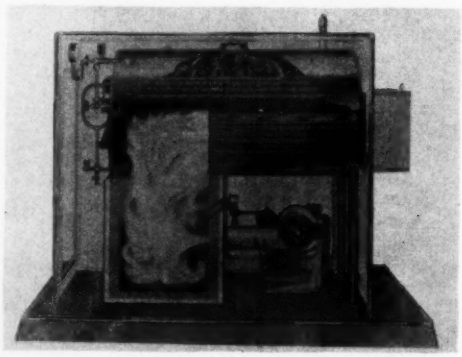
ECON-OMATIC

features, it is pointed out that the main bearings are submerged in oil. The wrist pin bearing and cylinder walls are lubricated by a splash system. The motor is furnished to conform to the available current characteristics and employs a special V-belt type of drive designed for quiet operation and a reduction in slippage and friction losses. The condenser is of the copper-finned radiator type with a metal casing and shield around it which deflects the flow of air drawn through the condenser by the fan. York Ice Machinery Corporation of York, Pa., is the manufacturer.



Oil Burner-Boiler Combination

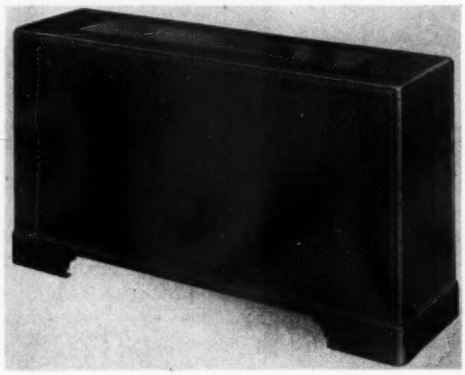
The equipment shown in the accompanying view is described as combining in a single coordinated unit the burner, boiler, instantaneous water heater and all automatic controls. The base of the boiler is steel and into this has been constructed a moulded combustion chamber backed by 2 in. of insulating material. The burner is entirely enclosed in the unit and has been installed with the idea of lengthening the fire travel. The flame travels to the front and then to the back before entering the tubes. In passing through the tubes the hot gases are directed by specially constructed retarders, or baffles, the idea being to cause a rubbing action of the hot gases against the walls of the tubes. York Oil Burner Company, Inc. of York, Pa., is the manufacturer.



Portable Summer Air Conditioning Unit

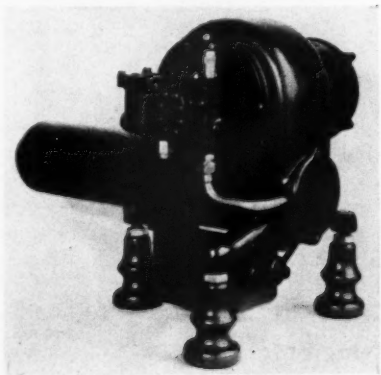
An air conditioning unit for summer cooling has just been placed on the market as a part of a complete air conditioning line. It is described as being completely self-contained and semi-portable, housing within the cabinet the refrigeration machine unit with a 1 h. p.

motor. An electric connection for the motor and water and drain connections for the machine unit are described as being the only installation requirements. This unit is designed not only for cooling but for the purpose of dehumidifying and circulating air. Its capacity is rated at approximately one ton and it is described as being particularly adaptable to homes, business and professional offices, small stores, shops and the like. The overall dimensions are 66½ in. by 14½ in. by 31 in. The other equipment in this line includes a floor type air conditioner for heating and humidifying as well as cooling, dehumidifying, filtering, circulating and ventilating; a 3½ ton capacity suspension-type unit, also for year around use and for summer cooling only; and refrigerating machine units of five and ten ton capacities for air conditioning apparatus and commercial refrigeration. Servel Sales Corporation, of Evansville, Ind., is the manufacturer.

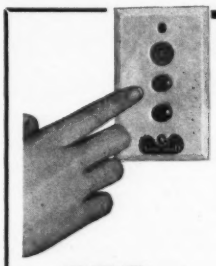


Gun Type Burner Introduced

The accompanying illustration shows a gun type oil burner which just recently has been placed on the market. All of the cast iron parts are described as being



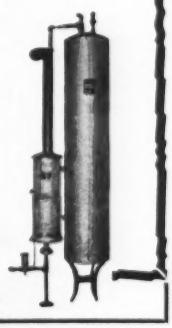
finished in a mottled porcelain enamel. It is described as being an intermediate size burner with a heating capacity of from 300 to 2,000 ft. of steam radiation. The motor and the pump are flanged to the fan housing. All of the interior parts are made to be quickly removed from the back of the gun. Harry C. Weiskittel Co., Inc., located at Philadelphia Road at Monument Street, Baltimore, Md., is the manufacturer.



GAS-GARD
Remote Control
the quick-action feature that ACTUALLY SELLS
Water Heaters
Guaranteed 5 Years!

The sales keystone of water-heating convenience! Just press the button, Gas-Gard electric control does the rest. Ten years of satisfactory service are behind its iron-clad five-year guarantee.

Quicker Sales ..Bigger Profits



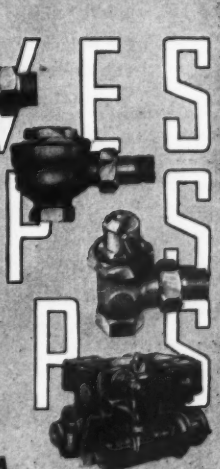
You'll show yourself a neat profit selling and installing these safe, economical controls. No cables, levers or conduits to cause you trouble.

Write for Descriptive Literature

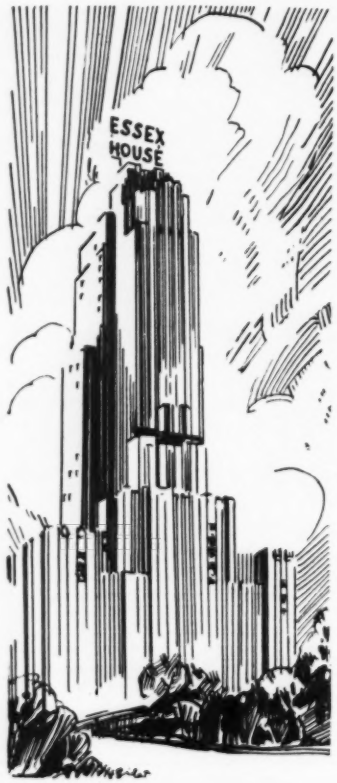
GAS-GARD, Inc.
217 West Main St.
ROCHESTER, NEW YORK

HOFFMAN
now offers the MOST COMPLETE LINE *of* STEAM HEATING SPECIALTIES

VALVES
TRAPS
PUMPS



FOR EVERY TYPE OF STEAM HEATING SYSTEM
For full information See Your Wholesaler or write to
Hoffman Specialty Co., Inc., Waterbury, Conn.



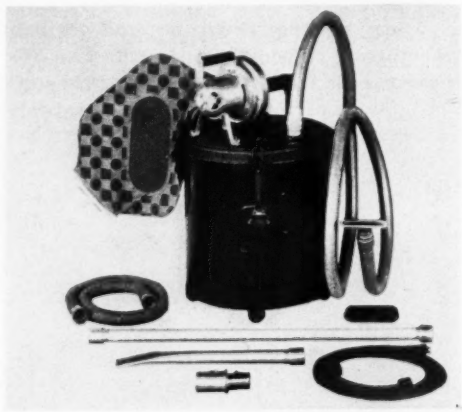
A PRODUCT OF YOUR GENIUS AND ENGINEERING SKILL STANDS READY TO SERVE YOU AT

ESSEX HOUSE
160 Central Park South
New York City

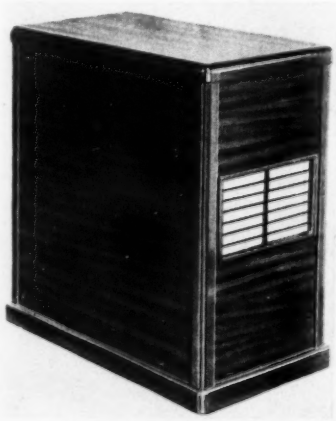
When those humid, sweltering days of summer come upon us, remember that the Teakwood Dining Room, Persian Coffee Shop and Cafe Essex are completely air-conditioned. Then, too, there are extra large rooms and suites. Essex House is a forty-story, ultra modern hotel, overlooking the 840 beautiful acres of Central Park.

Unit for Cleaning Heating Equipment

Here is a unit which has been placed on the market just recently for cleaning all types and parts of heating equipment. It is described as having a ½ h. p. ball bearing motor which is designed not to require oiling. It is portable and is designed to clean hot plants. The flexible hose is made of metal and is insulated with asbestos.



In operation, the unit is designed to collect all of the soot, scale, ash and dirt in the black enamel container shown in the accompanying illustration, while only a very small amount of the lighter dust enters the bag. Henry Brown, located at Asheville, N. C., is the manufacturer.



An Improved Humidifying Unit

This humidifying device is described as being an improvement over a former unit. It is installed by plugging a service cord into an electric light socket. There are no water connections. It takes air into the unit from the floor. Humidification occurs by the evaporation of moisture which is picked up by filter paddles as they rotate in water. Campbell Metal Window Corporation, located in the Pershing Square Building, Park Ave. and 42nd St., New York, is the manufacturer.

New Catalogs and Literature

Bulletin Describes New Temperature Control System

Penn Electric Switch Co. of Des Moines, Iowa, has just issued a bulletin describing its new Penn Temtrol for low mounting in effective temperature zone, a control system which makes it possible by converting the heat of the normal current in the thermostat circuit to control room temperature within close limits, in most cases within one-fourth of a degree, it is claimed. The device is described as being extremely simple, easy to keep clean and capable of withstanding shocks and jars. The adjustments for temperature is on the top, instead of the bottom, and because a low mounting might invite tempering by children this adjustment is not readily changed, nor is it easy to remove the cover.

Announces New Water Level Control

The Newark Boiler Regulator Company of East Orange, N. J., has issued a bulletin announcing a control unit which has just recently been placed on the market to protect automatically fired boilers against excessive pressure and low water. This unit is made in two models, one for steam systems, and another for vapor vacuum systems.

New Book About Air Conditioning

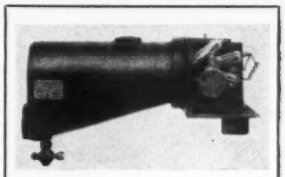
"Air Conditioning Simplified" is a new book which has just been published by Domestic Engineering Co. of Chicago.—"Education is the attempt to make use of the experience of others to close up the gap that exists in our own experience." No form of education can be so valuable in a field as relatively new as air conditioning as that which draws on the experience of men who have worked with air conditioning for years. In this volume is collected the conclusions of about twenty men who have studied the subject from a theoretical standpoint and have made practical applications of their conclusions.

The book is divided into three sections, the third devoted to sales methods as noted above. The first section of the book covers the theory of air conditioning. It explains thoroughly, but simply, the mechanical requirements and authorities such as Walter L. Fleisher, Malcolm Tomlinson, A. M. Daniels and others are here presented.

In the second part of the book we come to the actual installations, beginning with floor plans and requirements, tracing the calculations necessary, the installation and working drawings, detailed drawings of the equipment involved, costs, etc.

As in every new development, there is danger that the man who is selling the idea may promise too much. He can only be sure of offering just what air conditioning will do if he has mastered the subject. The present volume will give him a very clear idea of what air conditioning will do, and what equipment will be required to secure the desired result.

Low Cost, Dependable Boiler Protection



BIAD *and* TRIAD SWITCHES

POSITIVE protection against the hazards of low water level and excessive pressures is now available at *low cost*. BIAD and TRIAD Switches provide this protection for every automatic fired boiler. Simple in design, positively dependable in operation, low in cost, BIAD and TRIAD Switches offer heating men an opportunity to "cash in on safety." Write for details.

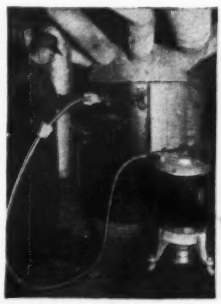
NEWARK BOILER REGULATOR CO., Inc.
428 GLENWOOD AVE. - - - EAST ORANGE, N. J.

DO YOUR RADIATORS AND CLIENTS HISS TOGETHER?

Don't take any chances, use B & J vapor heating systems and give your clients quiet, even, economical heat. Barnes & Jones equipment gives long satisfactory service and reflects favorably on the reputation of those who specify or install it. We have just issued a *new* bulletin on a *new* thermostatic trap.

Write for a Copy Today

BARNES & JONES *Inc., 194 Brookside Ave.*
BOSTON, MASS.



The KENT *Suction Cleaner*

The KENT WILL GET YOU IN

Heating men are uniquely in a position to uncover many profit possibilities in the basements of their localities . . . provided they are equipped with Kent Double Suctions. Wherever there is a heating plant in need of cleaning, the Kent *will get you in*. We urge you to write for the details which may make this business available to you.

The KENT COMPANY, Inc.
158 CANAL ST., ROME, N. Y.

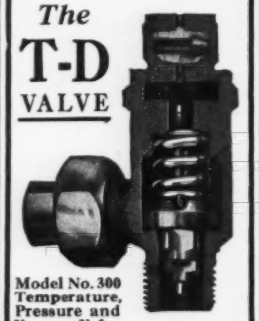
DOMESTIC HOT WATER
•
RAPID HEATING
•
HEAT CONTROL
•
All from this single Automatic Unit

B. & G. TRIPLE DUTY HEATER

Here's an item with a real sales story of economy and comfort for owners of hot water heated homes—the B & G Triple Duty Heater provides heat and hot water at less than the cost of heating alone! Increases circulation, automatically controls room temperature and assures almost instant heat at radiators upon demand. Rugged design, rubber-cradled, noiseless motor. Write for details.

BELL & GOSSETT COMPANY
3000 Wallace St. Chicago

The T-D VALVE



Model No. 300 Temperature, Pressure and Vacuum Valve

Positive Protection AGAINST *Explosion, Collapse and Bursting!*

WHEN you specify T-D Valves, you not only protect your customers against these disastrous hazards... you also protect *your* reputation. Always remember ... "the boiler is as dependable as its safety valve". Write for T-D Valve details.

T-D SPECIALTY CORP.
300 Rutherford Ave., Boston, Mass.

COPPER COILS

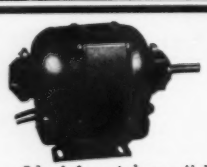
for all makes of Instantaneous Water Heaters "Coils That Are Really Guaranteed."

Catalogue Price List Mailed on Application.

Also Manufacturers of Water Motors.

UNION COIL & MFG. CO.

207 INVESTMENT BLDG. PITTSBURGH, PENNA



Resiliently Mounted Motors

Ideal for stoker, oil burner, air conditioner, refrigerator and other applications demanding *quietness in operation*—isolation of noise and vibration. Ratings up to and including 3 H. P. Sample available for test.

A. C. Repulsion-Induction. Interchangeable frames. D. C. and Polyphase. Specials where required.

THE LELAND ELECTRIC COMPANY
Dayton, Ohio

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You wouldn't think of missing your daily paper « « «

yet it does not begin to help you as your business paper does . . so why not spend a minute to send in your subscription. You will soon realize the tremendous help you have been doing without.

DOMESTIC ENGINEERING
1900 PRAIRIE AVENUE • • CHICAGO

Fan Manufacturers Hold Annual Meeting

J. M. Frank, president of the Ilg Electric Ventilating Co., Chicago, was elected president of the National Association of Fan Manufacturers at its recent annual meeting in Detroit, Mich. C. A. Booth, vice-president of Buffalo Forge Co., Buffalo, was named vice-president of the association, and E. B. Cresap, Chicago, was re-elected secretary.

An election of the permanent Code Authority for the fan industry resulted as follows: C. T. Morse, president of American Blower Corp., Detroit; F. Herlan, vice-president of B. F. Sturtevant Co., Chicago; C. A. Booth, vice-president of Buffalo Forge Co., Buffalo; R. R. Ware, general manager of Clarage Fan Co., Kalamazoo; J. M. Frank, president of Ilg Electric Ventilating Co., Chicago, and L. O. Monroe, Detroit, secretary.

At the meeting it was pointed out that the Index of Fan and Blower Business, which in the past has been considered a reliable criterion of general business, has turned upward, reflecting a rise in industrial building and trade activity.

Oil Heat Association of Long Island Holds Annual Meeting

The Oil Heat Association of Long Island held its annual meeting at the West End Tavern, Hempstead, Long Island, N. Y., April 9, with a good attendance, and elected the following officers for the ensuing year: President, Charles Bendix; vice president, J. D. Breckon: treasurer, Frank Mahoney; secretary, E. B. Lippsett. These officers will also serve as directors as will A. F. Van En. The president and vice president were appointed a committee of two to revise the by-laws to conform with the incorporation laws. President Bendix also reported on the prices filed with the Code Authority. His report showed that 88 dealers have complied with the requirements of the code. This represents approximately 67 per cent of the dealers, whose names are filed with this association.

As most members of the association are not yet thoroughly familiar with the sales tax problem, it was suggested that a leaflet be prepared and printed explaining the rules of the state, and mailed to all members. W. Schroeder of the Code Authority was present and addressed the meeting, explaining what the Code Authority is doing to secure the approval of the government on the cost accounting system. Mr. Schroeder explained the various activities of the Code Authority and congratulated the Long Island Association on its co-operation.

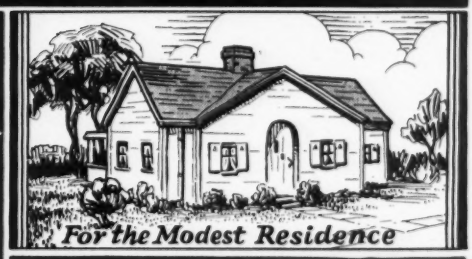
On the suggestion of Mr. Van En, a rising vote of thanks was extended to President Bendix and the other officers for their untiring work in behalf of the association during the past year.

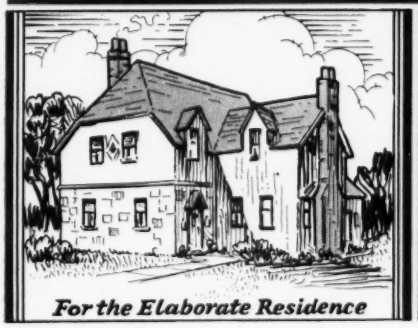
Forced Warm Air Short Course a Success

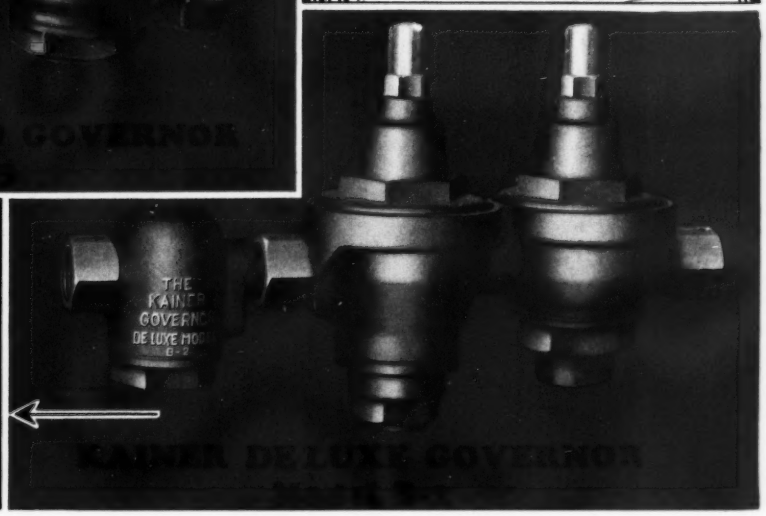
The Third Forced Warm Air Short Course conducted by the Mechanical Engineering Department of Michigan State College of Agriculture at East Lansing, Mich., March 26, 27 and 28, was well attended by fifty men who spent those three days there concentrating on the fundamentals of forced warm air heating.

A KAINER GOVERNOR

For Any Hot Water Job — In Both Moderate and Elaborate Homes! . . .


For the Modest Residence


For the Elaborate Residence



Sold By Better Jobbers—See Your Nearest

C-3 is all you need say to your jobber to obtain a KAINER STANDARD GOVERNOR.

This model for Hot Water Heating Plants is particularly popular ***now*** with the Heating Trade generally. It is a fast selling specialty and recent sales records indicate that contractors recognize the outstanding merits of this model in both its construction and price.

Easily installed it makes a fully closed system with ***dependable automatic*** control of the hot water. ***Essential qualities*** in both ***material*** and ***points of function*** have been strictly maintained in this unit.

Ease of inspection without disturbance—Accuracy and reliable performance are assured you at ***No Greater,*** in fact at ***more nominal cost.***

B-2 designates to your jobber that you want a KAINER DE LUXE GOVERNOR—the pioneer Hot Water Heating Plant control of our entire line.

Thousands of very ***representative*** and many very ***elaborate*** homes throughout the country are De Luxe equipped.

Every conceivable engineering principle has been evolved around and employed in building this top-notch unit which also enjoys an enviable sales record since ***contractors*** unhesitatingly ***recommend*** our De Luxe Governor on jobs where owners ***insist on*** the very ***finest obtainable.***

As background, Kainer Products have over twenty years of manufacturing experience and research. Kainer Governors have an ***exclusive*** feature that allows ***complete inspection*** without disturbing any mechanism or existing adjustments.

FIRST WITH STAINLESS STEEL VALVES

FIRST WITH "COOL FEED VALVE" FEEDER

FIRST WITH WIPING ACTION HIGH VOLTAGE SWITCH

FIRST WITH "QUICK HOOK-UP"

FIRST WITH "FLOAT AND SYLPHON" CONSTRUCTION

FIRST WITH ALARM FEATURE AS STANDARD

FIRST WITH COMPLETE DATA BOOK

THE VOICE of automatic heat rings out: "Cellar Stairs are Weary Stairs"...."Fire your furnace from your easy chair"...."The hand that rocks the cradle should never touch a shovel"....

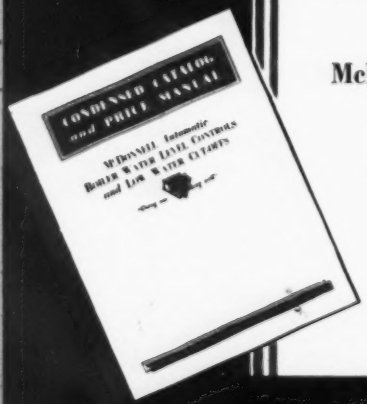
But—

—Neither should that tender hand grope for a dirty feed valve, only to open up a full stream of cold water into a hot boiler . . . . nor should that soft voice become harsh in an emergency call to hubby that "Something smells like it's burning in the basement!" — first signal of a forgotten boiler water line and a heavy repair bill!

Yes, your automatic jobs should be made *entirely* automatic - - - by installing McDonnell Safety Feeder-Low Water Cut-off combinations on every automatically fired steam or vapor boiler. Hundreds of dealers are making combined units standard on every steam job. Twenty-one boiler-burner manufacturers have adopted McDonnell Boiler Water Lever Controls as a standard part of their equipment.

If you haven't complete facts, write today for our new Bulletin 34.

McDONNELL & MILLER, 1306 Wrigley Bldg., Chicago



McDONNELL
Boiler Water Level
CONTROL

"Doing One Thing Well"

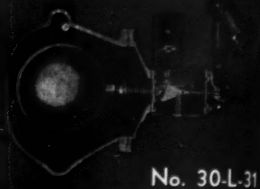
Here is one case where leadership does not exact a premium price. Despite their many plus features the price of McDonnell Equipment—type for type and size for size—is rarely higher often lower than other makes.

For AUTOMATIC JOBS

All good authorities now agree that a combined feeder and cut-off offers the only complete water level control for automatic jobs. Such units as the No. 37-35, 30-S-31 and 30-L-31 illustrated below. If protection alone without the added convenience is acceptable, and price is a ruling factor, the two most dependable and reasonable low water cut-off switches are the McDonnell No. 60 and No. 48.

No. 37-35

Combined feeder and cut-off switch—For boilers up to 2500 Sq. Ft. Maximum Steam Pressure 15 pounds.



No. 30-L-31

Combined feeder and cut-off switch—Maximum Steam Pressure, 25 pounds. Use No. 30-S-31 for boilers between 2500 and 5000 Sq. Ft. and No. 30-L-31 for larger boilers.

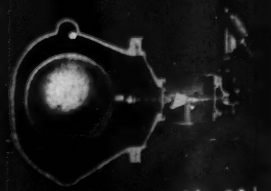
No. 60

Low Water Cut-off with quick hook-up feature. Maximum Steam Pressure, 25 pounds. Especially recommended for round boilers and boilers that have the water glass in the first section. Use No. 48 for boilers that have independent water columns.

For HAND-FIRED JOBS

No. 37

For boilers up to 2500 Sq. Ft. Maximum Steam Pressure, 15 pounds.



No. 30-L

Max. Steam Pressure, 25 pounds. Use No. 30-S for boilers between 2500 and 5000 Sq. Ft. No. 30-L for boilers larger than 5000 Sq. Ft.

SUPPLY NEWS

Month's Developments among Manufacturers, Wholesalers and Salesmen in All Sections

R. E. Bidwell Elected President of Abingdon Sanitary Mfg. Co.

Ray E. Bidwell, vice president and general manager of the Abingdon Sanitary Manufacturing Company of Abingdon, Ill., was elected president and general manager of the company at the recent annual meeting of the stockholders. Mr. Bidwell succeeds James Simpson as president, and Mr. Simpson, who has been president for a number of years, is now chairman of the board of directors. He has been spending most of the past year in Phoenix, Ariz., for the sake of his health. The election of Mr. Bidwell to the presidency was the only major change in the personnel of the officers and directors. The other officers, who have served for several years are: J. Walter Hatch, vice president, in charge of production; L. G. Casler, treasurer, and Edwin W. Crumbaker, secretary.

R. E. Bidwell

General Sales Department in New Location

The general sales department of the Hoffman Specialty Co., Inc., has been moved to 500 Fifth Avenue, New York City.

U. S. Radiator Corp. Reports Decrease in Losses

The United States Radiator Corporation of Detroit, Mich., recently held its annual meeting in that city, at which President Henry T. Cole submitted his annual report for the year ending January 31, 1934, to the stockholders. This report shows that "the total losses for the fiscal year amount to $888,055.38. This, however, was after provision of $251,628.53 for estimated losses on deposit accounts with closed banks. The actual operating loss of the business for the year was therefore $636,426.85. This amount compares with the total loss for the preceding year amounting to $1,543,897.66—a reduction of $907,470.81. The policy of rigid economy was continued, the total selling and administrative expenses being reduced a further 22 per cent during the year.

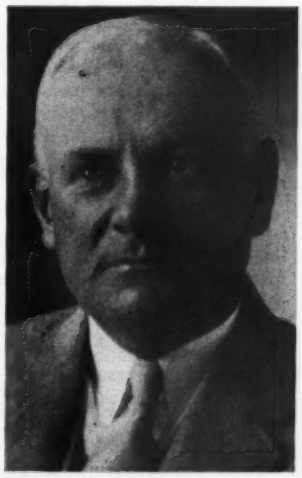
"While the available volume of business, due to continued shrinkage in the building industry, was the smallest ever experienced, the corporation slightly increased its total sales and fully maintained its trade position in the industry. Private building operations showed a further reduction, the total awards for residential building dropping to approximately 5 per cent of the total for 1925, compared with 6 per cent for the previous year, while the total building permits issued for all classes of building amounted to about 8 per cent of the 1925 total, compared with 10.9 per cent for 1932."

Trenton Potteries Co. Reelects Its Officers

Trenton Potteries Company of Trenton, N. J., held its annual meeting in that city on April 20 and re-elected its officers and directors as follows: Chairman of board of directors, John A. Campbell; president, Elzey S. Aitkin; vice president, Paul R. Berryman; secretary and treasurer, H. F. Whitehead; assistant secretary and treasurer, C. A. Stevenson, all of Trenton, N. J. The board of directors: John A. Campbell, Elzey S. Aitkin and Paul R. Berryman, all of Trenton; J. B. Berryman, C. R. Crane, II, A. F. Gartz, Jr., and H. W. Seymour, all of Chicago; P. R. Mork, New York City, and M. D. Robinson, Philadelphia.

Heads Boiler and Radiator Sales

W. K. Glen has just been made manager of the boiler and radiator sales department of the Crane Co. with headquarters at the company's general offices, 836 S. Michigan Avenue, Chicago. This promotion came to Mr. Glen shortly after he had completed 30 years of service with the company, having first joined that organization on April 2, 1904. At that time he began work as a clerk when the Spokane, Wash., branch was opened. By 1909, he was manager of that branch having risen through all of the various departments. In 1922, Mr. Glen was transferred to



W. K. Glen

Chicago as advertising manager, a position which he held for ten years. In 1932, he became Chicago district manager, the position he now gives up to manage boiler and radiator sales.

Mr. Glen is known to many hundreds in both the heating and plumbing industry in all parts of the country as a result of the work he has done not only in connection with the Crane Co. but with association activities, with various committees and in trade extension and convention work.

Heads Thermal Unit Sales

John R. Cooper, who has been eastern branch manager for the Thermal Unit Manufacturing Co. with offices in New York for the past six years, on May 1 was transferred to the main office at Chicago as sales manager. This company manufactures heating and air conditioning equipment. The Arctic Engineering Co., 123 White Street, New York, N. Y., will be distributor for the Thermal Units company in the eastern territory.

Eastern Supply Studies Codes and Modernization Market

THE dominant issue discussed at the spring meeting of the Eastern Supply Association, held at the Hotel Astor, New York, April 11, was how plumbing and heating wholesalers and manufacturers can take advantage of the several NRA codes recently signed and still in process of completion. It was generally conceded that the new regulations pave the way to renewed prosperity for this industry.

ANALYZES PLUMBING FIXTURES CODE

The first speaker to discuss the subject was L. L. Smith, publicity director, Kohler Co., Kohler, Wis., the title of his address being, "Problems and Prospects Under the Plumbing Fixtures Industry Code." From intimate acquaintance with the new rulings he declared that codes, instead of being only temporary measures, are likely to endure for many years, perhaps a generation. Whether needed or not, he said the plumbing and heating industry must recognize their existence and abide by them. In so doing most of the abuses that distressed business previously will be remedied and thus the gates thrown wide open for renewed prosperity and more satisfactory conditions all around.

Tracing some of the details of the Plumbing Fixture Industry Code, Mr. Smith explained that there has been no intention of legislating anyone out of business nor strangling competition of the approved sort. In fact, he made it clear, the code was so phrased that fair competition would be fostered.

It was Mr. Smith's opinion also that those who found it impossible to stay in business and live up to the Plumbing Fixture Industry Code should be eliminated if the causes of their difficulties are due to chiselling, misbranding and other abuses. He advised members of this industry to endeavor to market vastly more than fixtures as such. He emphasized that it were better to stress good health, personal comfort and like benefits that accompany good fixtures and good plumbing.

Considerable distress continues in "durable goods" industries, of which plumbing and heating is a part. "Durable Goods" business were the hardest hit and have been slow in recovering although some other branches of general business already have well nigh recovered. Mr. Smith stated further that prosperity return in "durable goods" depends on public confidence, inferring that the Fixture Code was one method of inspiring such confidence. He emphasized modernization market opportunities.

HOW BOILER AND RADIATOR CODE WORKS

Another keynote speaker was Edwin W. Smith, H. B. Smith Co., of Westfield, Mass., chairman of the Cast Iron Boiler and Radiation Code Committee. He described the many difficulties in securing an agreement between manufacturers, wholesalers and plumbing and heating contractors, particularly on definitions as to marketing classifications. He was against the idea of wholesalers serving as contractors unless this business were handled by entirely distinct departments, and even under these conditions he considered it inadvisable because thus contractors would be discouraged and go out of business.

Wholesalers who competed with contractors would be using their price benefits in an unfair manner. Mr. Smith also opposed price cutting by both manufacturers and wholesalers as a means of obtaining business. Wholesalers should uphold their prices to contractors, he said. A practical remedy would be for manufacturers not to sell to those who cut prices.

Another feature of the Boiler and Radiator Code is the ability of the Cast Iron Boiler and Radiator Association to hold its own court and fine its members for code violations. Should offenders resist then the matter would be handed to the Code Authority or the Attorney General's office. The publicity thus brought about, he felt, would deter guilty members from airing their cases in public.

J. M. Chaplain, President

The "future order" abuse is believed to be corrected in the new code through a regulation that will probably make it necessary for any placing "futures" to do so on a special

order form to be approved by the NRA. These will be distinct from order forms regularly used by either buyer or sellers, this applying particularly to manufacturers and wholesaler relations. The object of the new measure is to prevent avoidance of code terms.

DISCUSSES GAS WATER HEATER CODE

William E. Rasch, American Gas Products Co., New York, speaking for the Gas Appliance and Industries Code, of which he is Vice-Chairman and for the Gas Water Heater Code, of which he is Chairman, offered figures to demonstrate that gas appliances have regained much ground since 1932. He felt that the code passed last November should prove an aid in business increase in 1934, especially in remodeling campaigns.

From unprofitable conditions in 1932 and 1933, this year to date indicates that the gas appliance industry definitely will be out of the red and sales volume is increasing daily. Despite the depression approximately the same number of employees have received their regular pay during the past two years, while pay rolls are advanced this year.

Some manufacturers, indicated Mr. Rasch, have increased their prices substantially but thus far gas appliance prices have increased only 10 per cent.

DIFFICULTIES IN WRITING CODES

Philip Faherty, ex-president of the Eastern Supply Association, related some of the difficulties incident to the coordination of the National Plumbing Code. It was necessary to rewrite the code, or a major part of it, 16 times before it finally was whipped into its present shape. The wholesale plumbing and heating code is still in preparation, he stated, due to failure of the various divisions to agree.

Speaking further on the Wholesale Code, William Bennett, past-president of the Eastern Supply Association, said that slow progress has been due to constant bickering among the four elements concerned, particularly the Consumer Committee of the NRA. It is hoped, however, that the code will be ready soon. He said that had the committee been willing to accept a poorly written document there would be a wholesale code now ready, but it was considered preferable to wait until all parties could be made to agree and the regulations so written as to protect manufacturers and wholesalers as well as contractors and the general public.

The Spring Meeting of the association was the first to be presided over by J. M. Chaplain, John Simmons Co., New York. In his address of welcome President Chaplain expressed optimism as to 1934, judging from volume of business handled by his wholesale company. Modernization of old apartments and hotels has brought out of hiding orders for hundreds of fixtures of many kinds. The demand both for new homes and remodeling of old buildings should, he said, mean much of value this year for all branches of the plumbing and heating industry.

In the address of Frank S. Hanley, secretary, the value of the Association's Credit Bureau was stressed. From figures read it is indicated that the Bureau has proved highly effective in collecting old accounts. He urged members to avail themselves of the advantages frequently.

Through an amendment to Section 2, Article 2 of the By-Laws, permitting assessment and covering joining of other organizations the way now is open for joining by the E. S. A. and its members the new, proposed Federated Supply Association, which may include the Eastern, Central, Pacific and other groups in a single national body. There were no objections recorded.

At the 1934 WORLD'S FAIR

The **Watrous** JEWEL FLUSH VALVE

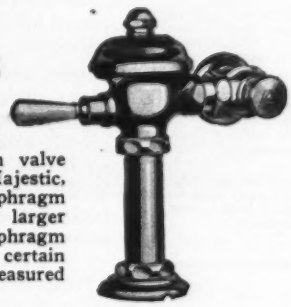
Is Installed in All Official Buildings

AT the Century of Progress Exposition, Chicago, which re-opens at the end of this month, all comfort stations in the official buildings are equipped with the Imperial Jewel flush valve. The entire installation was directed by James B. Clow & Sons, jobbers, and the J. W. Holt Plumbing Co., contractors.

The dependable action of this popular valve is partly due to the complete travel of the piston, which assures a full waterway. The rate of flow thus maintained means a thorough flush, even under low pressures—an important feature in the tall buildings of large cities.

MAJESTIC FLUSH VALVE

Unfailing action under all pressures is a marked feature of every Watrous flush valve design. In the Majestic, shown here, the diaphragm area is 25 per cent larger than in average diaphragm valves, which makes certain of an accurately measured flow.

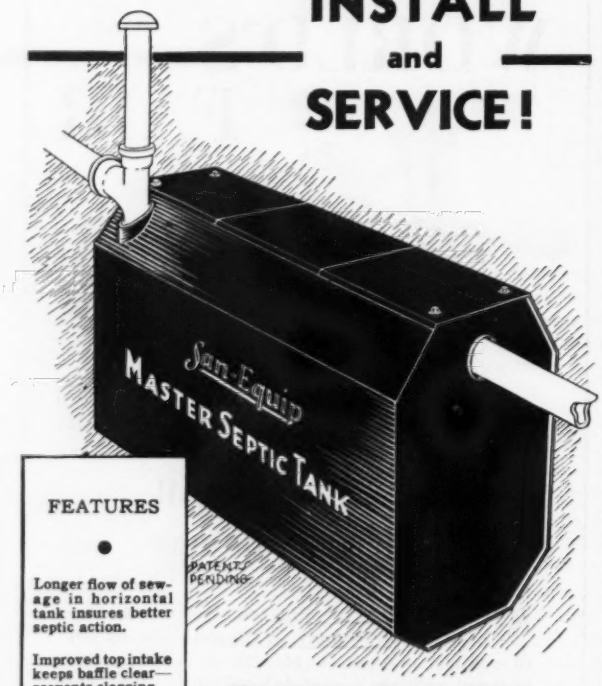


Write for Plumbing Catalog No. 433

IMPERIAL BRASS MFG. CO.
1231 West Harrison St., CHICAGO

WE REPEAT . . .

Easier
to
SELL
INSTALL
and
SERVICE!



FEATURES

Longer flow of sewage in horizontal tank insures better septic action.

Improved top intake keeps baffle clear—prevents clogging.

Intake extends above ground—provides fresh air to house stack. Liquid seal in tank prevents escaping gases.

No other trap or vent necessary.

T-type intake allows tank to be set at any angle to house line.

Easier to install. Excavation is but little larger than tank itself.

Intake extension marks tank location—gives access to intake baffle without digging.

Sectional cover permits easy inspection of tank if ever necessary.

EASIER to sell—at a profit—because no one can offer these sure-selling features in any other septic tank—no one can offer a septic tank anything like this at cut prices. Your profit is protected.

Easier to install—because it requires less excavation—less work.

Easier to service—because the very possibility of trouble is minimized and the intake baffle is easily accessible without digging.

Sell a Master Septic Tank on every unsewered job. Make more money—keep your customers completely satisfied. Master Tanks are sold only through the plumbing trade. Ask your jobber for complete details and prices. Or write to—

SAN-EQUIP INC.
715 E. Brighton Ave., Syracuse, N. Y.

San-Equip
SEWAGE DISPOSAL

Noland on Codes—

(Continued from Page 24)

BUILD UP PURCHASING POWER

The N. I. R. A. is often referred to as a "labor law." It is in the sense that if we are to have prosperity in this country we must first make sure that the rank and file of the workers are gainfully employed. I would remind you of the fact that all those in this country whose incomes are $2,500 a year or less, consume approximately 80 per cent of all of the production of our factories. Therefore, unless means can be found to pay adequate wages to this vast army of employes, our factories can not be busy, our distributors can not function, and our contracting plumbers and steamfitters will go hungry seeking work for there will be no large purchasing power.

The N. I. R. A. has already brought improvement through the employment of thousands of employes and the raising of the wage level. With the codification of all industry which in turn means the elimination of all unfair trade practices, the plumbing and heating contractor, along with the distributor and manufacturer, will rightfully take their places in the prosperity that is to follow and each group will enjoy its just share of profitable business and success. "Profitless Selling" is out of the window, never, I hope, to return.

The general keynotes of our industry policy should be to keep a well-stocked inventory position, a cost system, close cooperation with our competitors, the extension of short term credits (but don't let them become long term credits), and the general avoidance of non-profit business. Whether you know it or not, you must belong to some trade association for your own benefit and I know of none better than the National Association of Master Plumbers.

BETTER BUSINESS AHEAD

Trade practice conferences contain the key to the government's policy of the future. Technically, a trade practice conference consists of an agreement among members of a trade or industry to do certain things intended to prevent unfair competition, sometimes subject to approval by the government. The new ideas which developed with regard to trade practice conferences, intended to extend their usefulness, are these:

1. To give to the procedure a definite legal status which heretofore it has lacked. Heretofore it was illegal to do so.

2. Provide that the minority or dissenting members of a trade or industry shall be bound by the rules adopted by the majority, as measured by both numbers and volume of business. This is the greatest help.

3. To extend the subject matter of rules to cover regulation of production, wages, hours of labor and other matters which are related to ruinous price-cutting competition.

Under our industry code, please note that higher prices are permitted. Manufacturers, distributors and contractors can raise prices to take care of higher production, distribution and installation costs which may be due to higher wages, shorter hours, etc.

My friends, I want to tell you that conditions generally have greatly improved. I want to tell you further, and

I am very sincere in this belief,—that the depression has definitely outlived its life and will be a thing of the past. I wish it were possible to instill in each of you here today the great optimism I hold for the future—immediate and during the next few years. I honestly believe, with these changed conditions—with the putting into effect of our industry codes—that this industry of ours has in store for it the profit and success—and justly so—that it will not need to bow to any other industry in the land.

The year of golden opportunities is before us. With the elimination of those unfair methods of competition which we have long suffered with and suffered by—with the greater harmony and fellow consideration that embraces all of us in this industry—and with the elimination of everything that has been evil and consequently hurt every branch of the industry—I am telling you people that the blessed days have arrived when ethical practices, diligent work, fair competition and friendly feeling between manufacturer, wholesaler and contractor—one for all and all for one our industry—will bring to us who have survived those hectic days of the past and are still on our feet at this stage of the fight, the rewards justly due us.

The codes by themselves will avail us naught. The codes properly accepted and conscientiously carried out by all branches of our industry will spell the success they are intended to bring.

The manufacturers code has already been signed and approved and it is a good one for all branches of the industry.

The wholesalers code soon to be signed, assures for posterity the time honored system of distribution—from manufacturer to wholesaler to contractor.

The contractors code, soon to be signed, provides for costs of labor, a fixed overhead, and a profit on every job.

CODE SIGNING BRINGS WORK

What we need today in business and industry is leadership—the kind of leadership that is willing to give of its time—to educate and explain the ramifications of the new deal and the codes. We are not going to pass a law or accept a code over night and expect everyone in the United States to know all about it the next morning. State meetings will have to be held when your code is finally approved. Then district meetings—and the conditions and requirements of the code must be explained to every individual in A, B, C, language. A Code Authority will have to be set up for your state and the authority of this governing body will have to be delegated to committees throughout the state. These committees will have to be taught code requirements of your particular industry. And remember this one thing: regardless of the size of the contractor, large or small. the broad blanket of this Code Authority, backed up by the code itself, will govern such contractor's actions ten days after the code is signed by the President of the United States.

It will take weeks of hard work on the part of you leaders in this association—but it is bound to pay you large dividends in the end.

Let me close by saying the contractors code requires every man engaged in the plumbing and heating contracting business to earn a profit.

AS ALWAYS . . .

San-Equip

MEANS

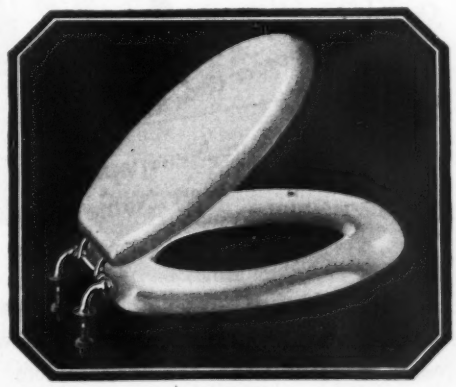
QUALITY

. . . and these new Toilet Seats are worthy of the name!

WITH the addition of our new toilet seats to our line, our policy of backing up your sales efforts with equipment worth selling opens up another profitable market for you. In the trade, San-Equip has come to mean QUALITY. We are determined that these toilet seats will strengthen our reputation for honest merchandise.

Therefore, we are building these seats to San-Equip standards of quality—whether sheet-covered, celluloid or varnished. You will like their appearance and construction—and so will your customers. Ask your jobber for complete information.

SAN-EQUIP INC.
715 E. Brighton Ave., Syracuse, N. Y.



VOGUE
A sheet-covered seat with chrome hinge

San-Equip

TOILET SEATS

2 BIG HELPS *for* SHOWER SALES

1-Special Discount on Cabinets for Floor and Window Display
HERE'S REAL Shower Comfor
The MODERN HOME Shower Cabinet
2-Cooperation in Newspaper Advertising over Your Name

There's profit for you in selling shower cabinets this summer. More than that, a shower cabinet is frequently the key to complete remodeling jobs.

In order to get started in time for the big season, write us today for details of these two powerful sales helps.

HENRY WEIS MFG. CO. INC.

502 Oak Street - Elkhart, Indiana

Boston Pipe & Fittings Co. Adds Three New Members

The Boston Pipe and Fittings Company, Congress Street, Boston, Mass., has recently added three new members to its personnel as follows: President, Shirley Mitchel; vice president, Harry Rivers, and secretary, William Carstenson.

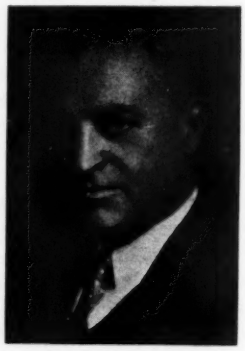
Shirley Mitchel is well known in the industry having spent many years in the Walworth Company organization and at one time was vice president of the Walworth-Ohio Division, and was with this company up to 1929. Since that time Mr. Mitchel has been connected with the Pittsburgh Valve & Fittings Co. and also had jobbing connections in Cleveland.

Harry Rivers was formerly with the Walworth Company for a number of years. Mr. Carstenson has been very active in the plumbing and heating wholesale field for years and until a few years ago operated the Wacco Supply Co. of East Boston, Mass.

Louis McCreary and Mr. Whitmarsh, former president and vice president, respectively, of the Boston Pipe and Fittings Company, still have a substantial interest in the new management and serve as two of the five directors.

James D. Erskine Called by Death

James D. Erskine, president of Erskine Heat Products, Inc., died at the North Country Community Hospital, Glen Cove, L. I., on April 19th, following an operation for acute appendicitis. He was born in Chicago fifty-eight years ago and is survived by his wife and mother and three children. Mr. Erskine had served as president of Erskine Copper Radiator Corp. and, before that, as president of Rome Brass Radiator Corp. Prior to these connections, he was associated for a number of years with American Radiator Co.



James D. Erskine

Reports 100 Per Cent Increase Over Last Year

Pennsylvania Range Boiler Company of Philadelphia, Pa., reports a 100 per cent increase in business during the first quarter of 1934 over the same period of last year. This increase in demand for the company's products resulted in many new workers being added to its payroll. W. H. Stewart, general manager of the company, attributed this business increase to the inevitable buying for replacement purposes.

Elected Officers of Taco Heaters, Inc.

At the annual meeting of the directors of Taco Heaters, Inc., of New York City, held April 11, Ralph E. Mayers was elected vice president and treasurer, and Joseph R. Murphy was elected vice president in charge of sales.

Mr. Mayers has been with the company since 1921 and has had supervision of accounting and finances. He has been treasurer of the company since March, 1928. Mr. Murphy has been with the company since 1920 and has been in charge of sales since 1929.

Will Handle Tank Heaters and Cast Iron Specialties

Philip J. Wenz and Solomon Patsiner have organized the Hatfield Foundry Sales Co. with offices and warehouse at 2724 Jackson Ave., Long Island City, N. Y. They will handle tank heaters and cast iron specialties.

Delaware Valley Trade Golfers Hold Annual Meeting

The Delaware Valley Trade Golf Association of Philadelphia, Pa., held its annual meeting recently and re-elected its officers for the coming season as follows: President, Charles P. Hackett; vice president, Frank Wilson; secretary and treasurer, Herman J. Kleinman, and captain, James Fraser.

Two golf tournaments have been arranged tentatively for June, one at the Trenton Country Club, Trenton, N. J., and the other at the Concord Country Club at Concordville, Pa.

It has been decided that should the members favor an additional meet, it will be held in Philadelphia, either in July or in August.

Business Personals

A. J. HOWELL has been appointed manager of the Pacific Coast district of Revere Copper and Brass Incorporated, of New York City, to succeed R. H. Binns, Jr., who has moved to the executive offices in New York City, as assistant general sales manager. Mr. Howell has been with Revere Brass and Copper on the Pacific Coast since the opening of its office there in 1932, and for many years previously represented the Rome Division of Revere on the coast. He will make his headquarters in the Bass Building in San Francisco. Branch sales offices for this district are maintained in Los Angeles and Seattle.

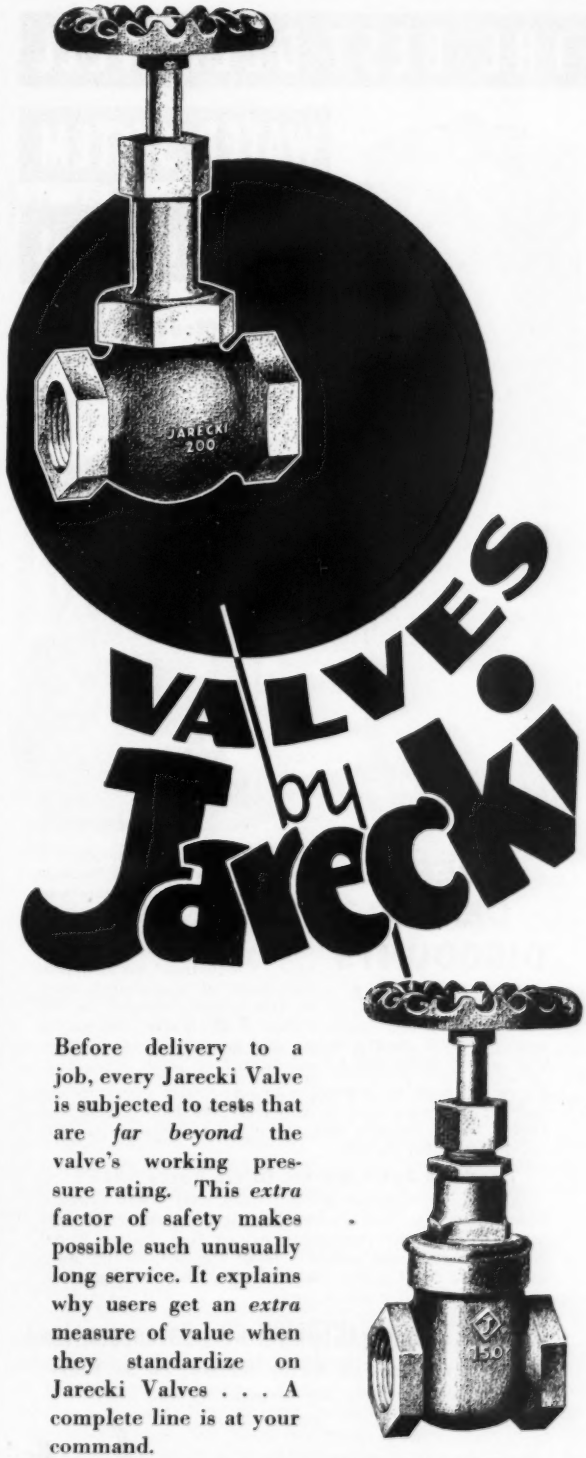
R. H. Anderegg

R. H. ANDEREGG has just been elected vice president in charge of engineering by the Trane Company of La Crosse, Wisconsin. Mr. Anderegg has been connected with this company for a number of years, first in the capacity of chief engineer and later as central division sales manager.

A. W. FULLERTON, manager of the plumbing and heating department of the Geo. Worthington Company of Cleveland, Ohio, was elected a director of that concern at a recent meeting of its stockholders.

CHARLES LIPSCHUTZ, manufacturers' representative, 1033 Drexel Building, Fifth and Chestnut Streets, Philadelphia, Pa., has taken on the agency of the Briggs Mfg. Co. of Detroit, Mich., manufacturing a line of steel plumbing fixtures, including various sizes of sinks. Later lavatories and bath tubs will be added. The territory served by Mr. Lipschutz includes Pennsylvania, Delaware, Maryland, Washington, D. C., and Virginia.

EMILIO N. MACKINNEY has been appointed representative in Mexico City, Mexico, for Sarco Company, Inc., of New York City, manufacturers of steam specialties. Mr. MacKinney is a Mexican, but was educated in the United States and is a graduate of the Massachusetts Institute of Technology.


JARECKI
200
VALVES
by
Jarecki
150
Before delivery to a job, every Jarecki Valve is subjected to tests that are *far beyond* the valve's working pressure rating. This *extra* factor of safety makes possible such unusually long service. It explains why users get an *extra* measure of value when they standardize on Jarecki Valves . . . A complete line is at your command.
Jarecki
MANUFACTURING COMPANY
ERIE, PA., U. S. A

THE BEST DEEP WELL

WATER SYSTEM

on the market

Model No. 250

$129.00 Not Including Cylinder. Other Deep Well Units Available from This Price Up.

LIBERAL DEALER DISCOUNTS *Unchanged*

BEST for the dealer because it is easiest to sell. BEST because it is unexcelled in materials, workmanship and precision standards. BEST for the buyer because it costs less and will give unequalled performance and years of economical, trouble-free service. Model No. 250 Deep Well Water System is equipped with electric motor and guaranteed for 5 years. Gas engine drive can be substituted at small extra cost.

There has been no reduction in our dealer discounts—in spite of increased costs in materials and labor. Sell Red Jacket Water Systems and make the largest profit. Act today—write for details.

Improved Farm Market Offers Ready SALES

Farmers have started buying deep well water systems. They know the Red Jacket line and its reputation for service. With the reasonably priced Red Jacket Model No. 250 dealers can secure a large measure of this business. Send for Catalog SW 87 for full line of deep well and shallow well water systems.

RED JACKET MANUFACTURING CO., Davenport, Iowa

Mfrs. of Pumps and Water Systems for 58 Years

Also a complete line of hand, windmill and three-way pumps, cylinders and well supplies.

DORWARD-Red Jacket

WATER SYSTEMS AND DEEP WELL POWER HEADS

PETER F. MCENANEY has been appointed sales representative for the EverHot Heater Sales Company of Detroit, Mich., to cover New York City territory and the state of New Jersey.

HAROLD B. RESSLER, vice president of Joseph T. Ryerson & Son, Inc., of Chicago, is moving to New York City to take charge of this concern's plant at Jersey City, N. J.

ARTHUR F. KING, for some time connected with the Philadelphia office of the Reading Iron Company of Reading, Pa., has been appointed district sales representative for this company with headquarters at 250 Stuart Street, Boston, Mass. Mr. King is a Bostonian and started his business career in the office of the Walworth Company, where he served twelve years. Following this he has been connected with the Reading Iron Company as sales representative for the last five years; covering Buffalo territory for some time before he went to Philadelphia.

Arthur F. King

H. B. HUFFAKER, for three years heating and air conditioning engineer for the Dail Steel Products Company of Lansing, Mich., has been transferred to Omaha territory with offices at 1111 Harney Street, Omaha, Nebr. He will cover Nebraska and the western part of Iowa.

E. L. NONNEMAN has been appointed representative for the Milwaukee Valve Company of Milwaukee, Wis., to be in charge of the company's office at 307 Minna Street, San Francisco, Calif., and J. C. ROMMEL has been placed in charge of this company's office at 1921 East Seventh Street, Los Angeles, Calif.

G. A. BAKER, formerly manager of the Buffalo office of The Duriron Company, has been transferred to this company's general offices at Dayton, Ohio, where he will specialize on sales of alloy steels. Colonel M. W. Smith of the general offices has taken over temporarily the management of the Buffalo office.

ROBERT J. BARRETT of Washington, D. C., president of the National Association of Master Plumbers, has been appointed a member of the executive committee of the Construction Code Authority. This executive committee will be in charge of the active direction of code administration between the regular meetings of the Code Authority as a whole.

RAYMOND MAIR has joined the sales organization of R. D. Bitzer Company, manufacturers' agents in Philadelphia, Pa.

MYRON H. GROVER has joined the sales force of the Richmond Radiator Company of New York City. He will cover the Boston area and make his headquarters in the company's office at 39 Somerville Avenue, Somerville, Mass., according to announcement issued by General Sales Manager Don D. Smith.

Walter D. Wood Dies in 85th Year

Walter D. Wood, president of R. D. Wood & Co. of Philadelphia, Pa., and owner of Florence Pipe & Foundry Co. of Florence, N. J., died in Washington, D. C., on Friday, April 20, in his 85th year. He had been in Washington a few days when he developed a severe cold which brought on a heart attack that caused his death. Mr. Wood had been president of the Wood Company for 63 years.

NEW STORE·SHOP and JOB ITEMS

A New Bath Tub of Modified Shape

There has just been announced and placed on the market a new shape of bath tub which is described as modifying, for the first time since the original stationary tub was installed in 1841, this fixture. As indicated by the accompanying illustration, it is square in shape and has a diagonal recess, an integral shower seat and a second seat to be used in entering or leaving the tub. In size, it is 4 feet square.

It has been designed to meet the varied needs of the modern bath and to make possible greater architectural variations in the bath room. Another feature listed for it is that it widens the latitude for decorative treatment in addition to providing a fixture which takes into account consumer desires regarding convenience. The bathing recess is the same length as that of a 5-ft. tub of conventional design, while it has 5 in. more width. The roll on the bottom has been eliminated to provide a roomy tub with a flat bottom. It is sold complete with shower and fittings and is provided in white and a full line of ten colors.

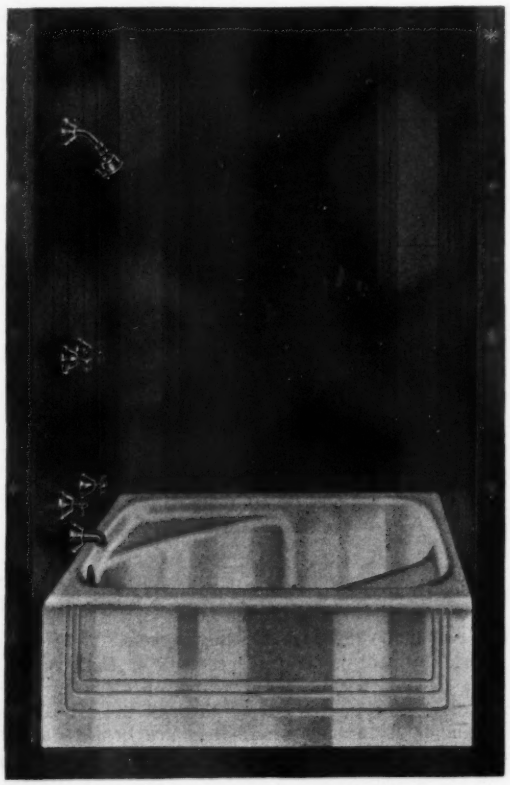
The seats on either side of the tub are intended to be used not only as a shower seat and as a seat to make it unnecessary to balance on one foot and step into the tub, but as general utility seats while taking a tub bath, seats for a foot bath and in the case of the front seat, as a seat for a mother while bathing children.

They also serve as shelves to hold brushes, towels and other items.

Virtually square in shape, the tub can be placed across one end of a long, narrow room, but it also makes it practical to provide a bathroom in a square or odd space. It is designed to widen greatly the latitude in the arrangement of fixtures and to permit the introduction of new bathroom furniture such as dressing tables and clothes hampers. Because of the width of the fixture, splash from the shower is kept inside the tub with the shower directed toward the back. It has been designed so that the need for waterproofing is minimized and confined largely to the area around the tub.

The fixture is two inches lower than conventional tubs, but the depth of water in the recess is the same, measured from outlet to center of overflow. Exact dimensions on the tub are 49½ in. from front to back, 48 in. wide and 16 in. high.

Standard Sanitary Manufacturing Company, P. O. Box 1226, Pittsburgh, Pa., is the maker.



Previews of New Bath Tub

Previews have been held for the purpose of acquainting plumbing contractors with the new bathing fixture described in the foregoing, before general publicity was released. A booklet in full color illustrations which contains a concise story gives a complete presentation of this new fixture. It has been mailed to plumbing contractors throughout the country. An illustrated envelop stuffer containing a condensed but complete story of this fixture also is being distributed.

Sump Pump and Cellar Drainer

An item just recently introduced is an automatic electric sump pump and cellar drainer which has been designed to contain a number of special features and improvements. It is constructed of bronze and has a special ¼ h.p. motor designed to be rust-proof and quiet running. Radio reception interference has been designed against regardless of the speed at which the pump is running. The unit is of the centrifigal open impeller type made to allow the passing of solids. It is made to remove seepage and drainage automatically. The shaft is of stainless steel with an automatic control feature consisting of an enclosed switch of the positive type which is actuated by an oversized ball float connected to the control rod. Adjustable stops on the control rod regulate the trip of the switch for the pump at various speeds. Tests of the sump pump have shown it capable of pumping 2,400 gallons per hour at a 1 ft. head. Also it is

It's a KOVEN Product

I want the

KOVEN MAKE

Specifying Koven is now a habit with the leading plumbers.

Over half a century of square dealing, combined with the best product that money can buy, that is the reason that the representative of the Koven organization always receives a hearty reception.

Every modern method and all of the latest commercial metals are used in the production of the Koven products.

The plumber knows that when he installs a tank of this make, he is not only giving his customer a product that is the finest in material, but also the best in workmanship.

A few of the Koven products:

RANGE BOILER
Galvanized or Copper
SCULLERY SINKS
BARBER BOILERS
KOVEN-PARACOIL TANKS

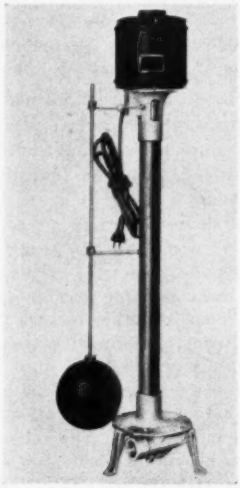
STORAGE TANKS
Steel or Copper
FUEL OIL TANKS
EXPANSION TANKS
SEPTIC TANKS

Insist on the best by asking for Koven products from your jobber.

Send for New Plumbers' Hand Book

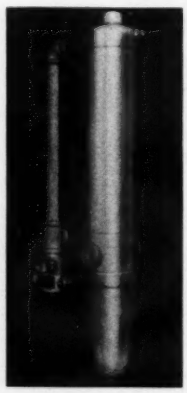
L. O. KOVEN & BRO. INC.
JERSEY CITY, N.J.

rated as capable of handling 400 gallons per hour at a 20 ft. head. The outlet is tapped for 1 in. fittings for easy connection to a pipe or hose line. The large inlet under the pump is protected by a non-clogging screen. There is a plug and 8 ft. of cord supplied with each pump and to complete the installation merely requires the connection of the pipe line and plugging in to the current. Another model is listed as having a capacity of 3,600 gallons per hour at a 25 ft. head. M. L. Oberdorfer Brass Company, of Syracuse, N. Y. is the manufacturer.



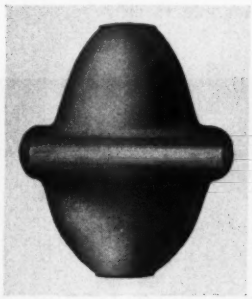
A New Water Heating Unit

The accompanying illustration shows a new water heating unit which just recently has been placed on the market for installations in connection with either new or present equipment. In operation, the cold water, after actuating the gas control, enters the heater at the top and is preheated by the products of combustion. This process is continued as



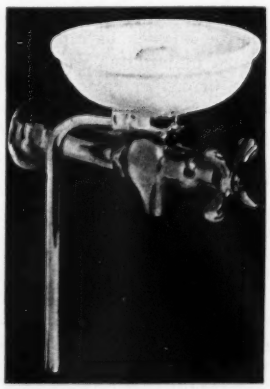
the water circulates around the secondary heating chamber on its way to the bottom of the heater where it enters the copper coil in the primary heating chamber. At this point it passes through the hottest products of combustion and receives its final heating as it travels up the coil. The hot gases travel up from the burner through the primary heating chamber to the top where they are turned downward through the secondary heating chamber and out the flue pipe

at the bottom. This unit is of the side-arm type and is designed to have quick recovery results and to permit small quantities of water being drawn from time to time without the necessity of heating the entire tank. An automatic safety pilot shut-off and a throttling type thermostatic gas control valve are standard equipment and integral parts of the heater. The unit is made to be attached with the same fittings required to install the usual non-automatic side-arm heater. The overall length is 26 in., the overall width is 10 in. while the diameter of the heater is 4½ in. It has a rating of from 3,200 to 4,200 Btu per hour. J. W. Moore Valve Corporation, located at Everett, Mass. is the manufacturer.



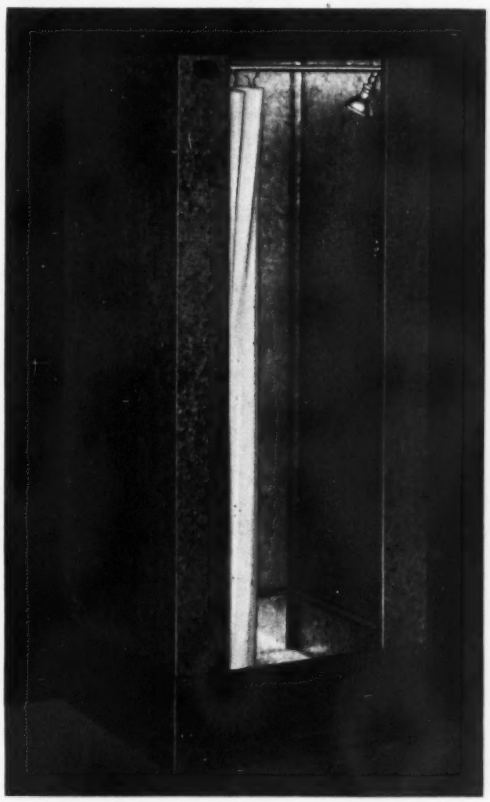
An Improved Flush Ball

The accompanying illustration shows a flush ball which is described as an improvement over an older type. It has been designed to seal all flush valves regardless of imperfections in the seats of the valves. Also, it is made to fit any size of flush valve. The cushion is made to give with the weight of the water and in that way close the outlet of the valve. A new style wire lift comes with each ball. This rod has a small ball on top and is designed to keep the flush ball from getting out of alignment. However, the flush ball is made so that it can be used with the former style of rod. Enbee Manufacturing Company, 45 Murray Street, New York City, is the manufacturer.



Combination Bubbler and Glass Filler

A development in bubbler type drinking fountains has been announced in the placing on the market of the new combination bubbler and glass filler shown in the accompanying illustration. The distinctive feature of this device is that it operates in both its functions by means of a single handle. A cam arrangement within the valve which is re-



Capitalize

ON THE TREND TO

Shower Stalls

There's no mistaking it . . . there is a *definite trend* to the new Ambassador All Steel Shower Stall. To the progressive plumbing contractor this trend represents *big profit possibilities* which he can capitalize on . . . *right now* . . . as the warmer season advances.

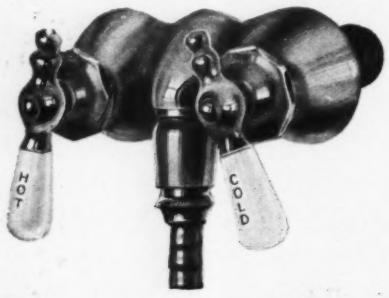
Let us tell you all about the Ambassador All Steel Shower Stall . . . its many advantages . . . why it appeals to home owners . . . and how it can help *you* to the profits which shower installations provide for you. Write today.

NRA WE DO OUR PART

ELKAY MFG. CO.
4704-14 ARTHINGTON ST.
CHICAGO ILLINOIS

The
AMBASSADOR
Improved Simplified Shower Bath Stall

YOU SAY THIS IS JUST A BATHCOCK



We Say It's More Than That!

For some twenty-five years we have been making brass goods for plumbers.

Reliable plumbers have found that reliable materials keep customers.

There is accuracy and reliability of manufacture to the **American** Line of Tubular Goods, Shower Fixtures and Lavatory Trimmings.

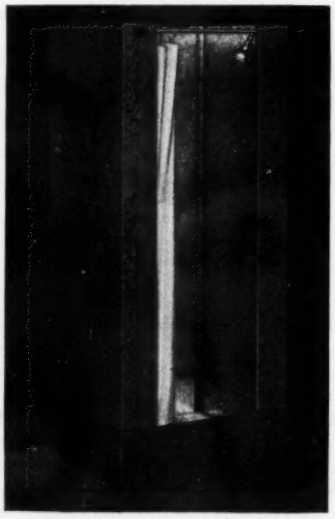
If you aren't using the **American** Line—try it!

You'll find that an **American** Bath Cock, for instance is more than just a Bath Cock. The most exacting plumber-mechanic has thought that way for many years.

Ask your jobber.

American SANITARY MFG. CO.
ABINGDON, ILLINOIS

movable or reversible, diverts the flow of water through either the bubbler or the glass filler spout as the handle is turned slightly in one direction or the other. This combination unit has been made adaptable to either city line connections or water coolers. For water cooler service, it can be supplied with the bowl elevated by means of a riser extension so that it can be above the top of the cooler cabinet, thus occupying a minimum amount of space while affording a better drinking height and unlimited head room. Instead of the round china bowl and china bubbler nozzle as shown in the accompanying illustration, the unit may be had with an oblong octagonal porcelain enameled iron bowl and an offset angle stream nozzle when so desired. The Chicago Faucet Company, located at 2712 No. Crawford Ave., Chicago, Ill., is the manufacturer.



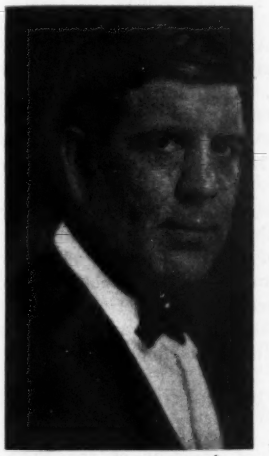
New Type Shower Stall

This new type shower stall has just recently been placed on the market as a unit of the knock-down type. It is described as being a completely equipped, self-contained compartment or room for shower bathing but can be set up anywhere in the house or building where water supply lines and a waste pipe can be connected to it. It is also adaptable for the basement. It may be installed as a single unit or in groups, as in clubs or public buildings. It has been made especially adaptable for both remodeled and new homes, summer cottages, apartments, hotels, resorts, tourist camps, clubs, golf clubs and industrial buildings. It has been made to be installed and assembled in a space no larger than the stall itself because all of the assembling is done from the inside of the stall. The receptor is of the inverted type allowing the stall to set on a finished or unfinished floor, thus eliminating rabbeting out of floor. This receptor has been made 10 in. deep to insure against the curtain slipping outside of the stall and to prevent the water from splashing outside of the stall. The outlet connection as an integral part of the bottom of the receptor is designed to make a leak-proof connection for caulking 2 in. iron pipe. The strainer plate is of chromium plated brass. The soap dish is of brass chromium plated while the curtain rod and flanges are of the same material and finish. The curtain is of white waterproof duck. The specially designed beveled type vertical rear corner construction has been employed to make a leak-proof joint. Elkay Manufacturing Company, 4704 Arthington St., Chicago, Ill., is the maker.

THE TRADE

News of what plumbing and heating contractors are doing the country over

Past President James S. Cassedy Called by Death



James S. Cassedy

James S. Cassedy, past president of the National Association of Master Plumbers and one of the best known master plumbers in the United States, died at his home in Cambridge, Mass., on April 13. Mr. Cassedy, who was born on December 25, 1872, in Rochester, N. H., devoted much of his time and energy to the improvement of the business which he chose as a life work. After serving in his youth as inspector of plumbing in Woburn and Lexington, Mass., he formed the company in Cambridge now known as James S. Cassedy, Inc., which for more than two decades has been one of the leading plumbing concerns in New England, having made installations in some of the most notable buildings in that section.

Mr. Cassedy served as president of the Massachusetts State Association of Master Plumbers, later from 1915 to 1916, as president of the National Association of Master Plumbers, and he was for many years a director of the latter association. In civic life he was also active, having been chairman of the Cambridge school committee and was a former president of the Cambridge Board of Trade. His wife died about ten years ago, but three sons, Gerald, Anthony and James S., Junior, and one daughter, Mrs. Joseph Stein, survive him. Burial was from St. Mary's Church in Cambridge, the funeral being attended by delegations from the Massachusetts State Association of Master Plumbers and the Heating, Piping and Air Conditioning Contractors Boston Association. He was a member of both these organizations at the time of his death.

In announcing his death, Robert J. Barrett, president of the National Association of Master Plumbers said: "The passing of Past President Cassedy is a genuine loss not only to his many friends and associates, but also to the entire retail plumbing industry. He was a man of outstanding character and served his fellow man with extraordinary loyalty and genuine friendship."

John C. Seitz, president of the Seitz Plumbing Service, Inc., in Buffalo, N. Y., died recently after an operation. Mr. Seitz was born in Buffalo in 1888 and had been active in the plumbing business in that city since 1914. His wife and a daughter survive him.

New Jersey Fixes Dates for Convention at May 18 and 19

New Jersey State Association of Master Plumbers will hold its annual convention in Atlantic City, N. J., May 18 and 19, with headquarters at the Hotel Madison, according to announcement issued by Secretary Paul Zeim of Bloomfield, N. J., following a meeting of the New Jersey State Executive Board, held in Newark April 14.

Alabama Master Plumbers Will Meet at Montgomery

The Alabama State Association of Master Plumbers will hold its annual convention at Montgomery, Ala., May 14 and 15, instead of Birmingham, as previously announced, according to announcement just issued by Joseph W. Pate of Birmingham, president of the association. It is planned to have each group of the building industry hold its convention on Monday, May 14, and elect delegates to organize the Construction League of Alabama.

Master Plumbers Council Reorganized

The Master Plumbers Council of Cleveland, Ohio, has been re-organized with the following offices: Al Schnitzer, president; Joe Passov of the City Plumbing & Heating Co., vice president; Sam Pliskin of the National Plumbing Co., treasurer, and H. I. Wayne, 10217 Columbia Avenue, secretary. The board of directors includes the officers and B. Rothman, Joe Finger and Harry Hart.

Illinois Association Moves Executive Offices

The Illinois Master Plumbers' Association has moved its executive offices from Chicago Heights to Rooms 1134-1137 in the Midland Building, 176 West Adams Street, Chicago, according to announcement issued by Henry P. Reger and Wm. R. Brookman, president and secretary, respectively, of the Illinois Association. The members of the trade are invited to avail themselves of the facilities of the new offices.

B. A. Newman Honored by Fresno Builders Exchange

B. A. Newman of Fresno, Calif., past president of the California State Association of Master Plumbers, has been appointed chairman of the important Public Relations Committee of the Fresno Builders Exchange for the coming year, according to a recent announcement by President J. M. Brown. Mr. Newman has for many years been a very active member of the Fresno Builders Exchange.

Missouri Master Plumbers Hold Golden Jubilee Convention

THE Missouri State Association of Master Plumbers held its golden jubilee convention April 9 and 10 in St. Louis, Mo., at the Jefferson Hotel, and it was one of the best attended meetings in the history of the organization, about 200 delegates being present when President Frank J. Murphy called the first session to order, and that many or more were in attendance at each session.

The outstanding features of the convention were addresses on the problems confronting the plumbing and heating industry at the present time, delivered by leaders in the various branches of the industry.

VICE PRESIDENT JOHN J. CALNAN'S ADDRESS

John J. Calnan, vice president of the National Association of Master Plumbers, in his address stressed the point that it is only through strong local and state associations that the National Association of Master Plumbers is able to survive. No one, not actually connected with the National office, can realize how much work the National officers must do for the benefit of the members, and how much the National officers must depend upon the support, which they receive from the state associations. He praised the Missouri Association for its aggressiveness and congratulated its members on the fact that they have had such great leaders in the past as Jere Sheehan, Sr., E. D. Hornbrook and L. McNamara, who all in their day served as presidents of the National Association of Master Plumbers.

A. B. Pierce, dean of the plumbing and heating supply fraternity in St. Louis and vice president of the N. O. Nelson Mfg. Co., spoke in behalf of the local jobbers. In his fifty years of service in the industry, he was twice elected president of the Central Supply Association and twice president of the National Pipe and Supplies Association and had therefore known many wholesalers. To his knowledge the great majority of wholesalers has always been in favor of co-operation with the master plumbers, adhering to the time-tried method of distribution from the manufacturer to the wholesaler, to the plumbing contractor, to the consumer, and he added that regardless of codes it is his belief that most wholesalers will continue to stick to this policy.

Left to right: President-Elect Joseph S. Levene, Vice President-Elect Edw. Monteath, Secretary E. H. Ost, and Retiring President Frank J. Murphy

Rupert J. Weber, first vice president of the Illinois Master Plumbers' Association, gave a short message of greeting from State President Henry P. Reger of Chicago, who was unable to attend.

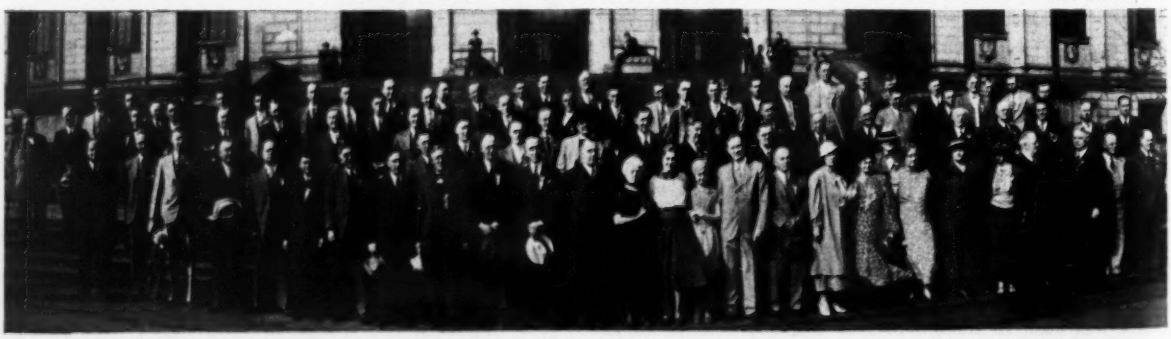
Short addresses were also made by Thomas J. Sheehan, past national director and at present collector of internal revenue in St. Louis; Charles E. Gawne, president of the Chicago Plumbing Contractors Association; Bernard F. Dickmann, mayor of St. Louis; Daniel O'Connor of Peoria, and several former state presidents. Telegraphic greetings were also received from National President Robert J. Barrett, Past National President Edw. B. Kleine, Past National Secretary Edw. L. Penfrase, and John R. Lewis of DOMESTIC ENGINEERING.

W. T. Conroy of Kansas City, in his address on "Publicity," emphasized the point that plumbing is primarily a matter of protecting the health of the nation, and he advocated that those who advertise plumbing to the public should devote a definite amount of space to the aim of enlightening the general public concerning the vital importance of having plumbing installed only by qualified master plumbers.

HOW PWA WILL HELP THE PLUMBING AND HEATING INDUSTRY

Coloniel Hugh S. Miller, chief engineer of the Public Works Administration in Missouri, referred to some of the projects which his department expects to start in the near future, and how members of the plumbing and heating industry may derive benefit from them. He also referred to the great opportunities which air conditioning has placed before the plumbing and heating industry. In passing he also urged master plumbers and heating contractors to work for the elimination of smoke as a means of bettering the plumbing and heating business.

A. P. Greensfelder, president of a local general contracting company and past president of the Associated Contractors of America, explained how the Construction Code would affect the Plumbing and Heating Industry. He also advised master plumbers to put on a publicity campaign to call atten-



Delegates and guests attending the Golden Jubilee Convention of the Missouri State Association of Master Plumbers, held in St. Louis, Mo., April 9 and 10

tion to the importance of their work to the community and to co-operate with other branches of the construction industry.

Past National President Jere Sheehan in his address said that President Robert J. Barrett had probably had the hardest fight of any president of the National Association, and he has come through that fight with the largest and strongest membership—18,000—in the association's history.

Edw. Monteath, state code executive, read a letter from President Barrett, which stated that the master plumbers and the wholesalers got together March 15 and have now written a code which is acceptable to all concerned. This code was submitted to the Code Authority on April 3, and is now awaiting the signature of President Roosevelt.

W. E. McCOLLUM'S ADDRESS ON CODES

W. E. McCollum, secretary of the Central Supply Association, said that unlike the master plumbers the wholesalers have no national association, and being members of several different associations in various sections of the country, it was no easy matter to get these different associations to unite on a single code. He assured his hearers that the policy of the Central Supply Association has not been changed and that its membership believes firmly in the long-established distribution practice. From manufacturer to wholesaler, to plumbing contractor, to consumer; and that a wholesaler should be exclusively a wholesaler.

W. J. Spillane of Chicago, chairman of the Joint National Committee, assured his hearers that members of the wholesalers and master plumbers code committees were in perfect harmony and had agreed on the codes as submitted to the code administrator. He said that the fight between the wholesalers and the master plumbers over various sections of the code had been a family row, and nothing more; and at no time did either faction lose sight of the fact that they had and have a common enemy in the chain store and D. T. U. competition. The one big fight from now on is to whip the chain store and D. T. U. houses.

President Frank J. Murphy's report of his activities during the past year was enthusiastically received. It showed a great increase in membership due to his untiring efforts as well as those of Secretary R. C. Hunt.

Treasurer J. F. Corrigan's announcement, " All bills paid, and more than $5,000 in the treasury," was also received with enthusiasm.

The election of officers resulted as follows: President, J. S. Levene of Kansas City; first vice president, Edward Monteath of St. Louis; second vice president, W. T. Conroy of Kansas City; treasurer, J. F. Corrigan, of St. Louis; secretary, E. H. Ost of Kansas City.

Delegates to the national convention: J. S. Levene, Edward Monteath and F. J. Murphy.

The new officers will decide where the next convention is to be held.

The dinner dance held in the Gold Room of the Jefferson Hotel was attended by 350 delegates and guests.

Several out-of-state guests and eight former state presidents attended the convention.

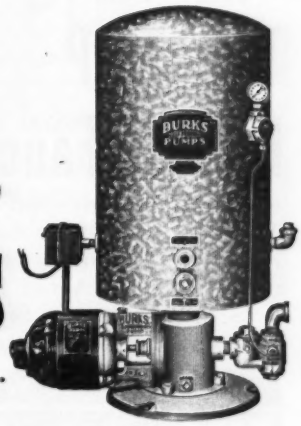
Mrs. E. D. Hornbrook of Kansas City, widow of a former state and National Association president, was honor guest of the St. Louis Association and presented the delegates with one of the several baskets of beautiful yellow roses that decorated the platform.

The following concerns had interesting exhibits at the convention: American Foundry & Mfg. Co. of St. Louis; American Radiator Co. of St. Louis; Sloan Valve Company of Chicago, in charge of A. F. Becker of St. Louis; Chase Brass & Copper Co. of St. Louis; International Nickel Co., in charge of H. H. Engeling of St. Louis; Kitson Co. of Philadelphia; Ruud-Humphrey Co., in charge Robert Thompson of St. Louis, and Interceptor Corporation of Michigan City, Ind.

IN SYMPATHY WITH YOUR PROBLEMS

BURKS SUPER-TURBINE PUMPS

"Only one moving part"



Offering

A GREATER PROFIT IN EVERY SALE

Had you noticed the fact that the Profit Margin offered you by Burks Turbine Pumps overtops other makes by as much as 50 per cent? Here's new encouragement for you. More profit per sale! It makes greater sales effort worth while. It means that you can broaden your sales program and enjoy more satisfaction and profit in doing it. This greater profit is yours—

Plus

A PRODUCT OF DISTINCTIVE ADVANTAGE OVER COMPETITION

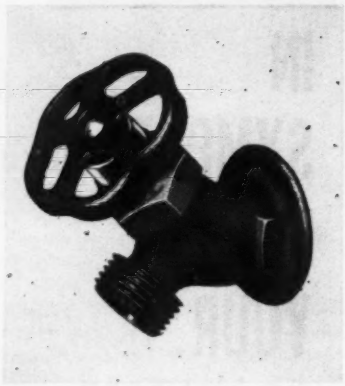
Worthy of the best things you can say of them, Burks Turbine Pumps stand alone as efficient, economical pumps for home water supply systems. *On actual test one of these smaller units pumped 200 gallons an hour, working on a suction lift of 22 feet and discharging against a 30-lb. pressure for SIX YEARS without stopping and without noticeable wear!* Investigate this remarkable pump and our remarkable terms. There's a Burks for every purpose. Burks fit in anywhere. Don't be contented with penny profits when you can just as well gather in the dollars. Sell a pump with distinctive competitive advantages. Sell BURKS. New Catalog No. 34 now available. Write for it.

The BURKS FRANCHISE CANNOT BE EQUALLED

The Burks Franchise is unequalled in: Liberal Discounts, Quality Product, Sales Advantages, Profit Opportunity.

DECATUR PUMP COMPANY
DECATUR, ILLINOIS

SPARE KNUCKLES WITH HAYS TIP-TOP LAWN Faucets.



They are husky faucets made to resist the elements and spare the knuckles. Hays Tip-Tops come with Loose Key Handle or with Key Wheel Handle. They are all brass rough nickel plated. Again Hays makes Quality and Price sing together. Send for folder.

HAYS MANUFACTURING COMPANY, 804 W. 12th St., ERIE, PA.

Manufacturer to Wholesaler to Plumber

HAYS

Plumbing Brass
Bath Fixtures
Copper Plumbing
Gas Service Goods
Water Service Goods
Iron Products
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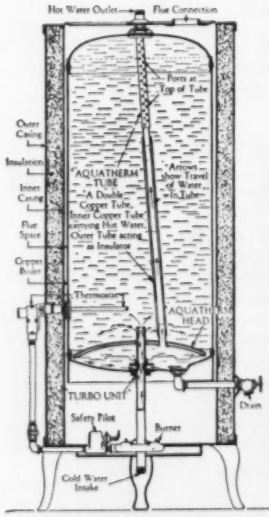
DAHLQUIST "TURBO UNIT"



Keeps hot water clean

The only fundamental improvement made in hot water storage tanks during the past 40 years.

SAVES GAS— STOPS BURNOUTS

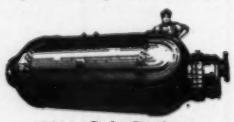
Prevents sediment from accumulating and keeps hot water clean and fresh.

This latest invention by Theodore W. Dahlquist is supplied in all DAHLQUIST COPPER BOILERS and absolutely stops sediment from forming on the bottom of the boiler. No need to drain a Dahlquist boiler every few weeks. The TURBO prevents sediment from forming—keeps the hot water always crystal clear, fit for drinking—prevents costly burnouts—reduces cost of gas 50%. Whether your need is for a home range boiler, an automatic hot water storage system or a commercial heavy pressure storage boiler, learn more about this remarkable improvement before you order.

Write for descriptive catalog.

TURBO AQUATHERM
(Under fired automatic hot water storage system)

ALL TYPES OF COPPER BOILERS



2000 Gal. Boiler

DAHLQUIST MFG. COMPANY

60 West 3d Street So. Boston, Mass.

North Dakota Master Plumbers Elect Joseph Keller President

THE State Association of Master Plumbers of North Dakota held its fourteenth annual convention April 16 and 17 in Grand Forks, N. Dak., under the guidance of President George Casper of Devils Lake.

NATIONAL VICE PRESIDENT CALNAN ADDRESSES CONVENTION

The main address of the convention was delivered by John J. Calnan of Chicago, vice president of the National Association of Master Plumbers. Among the points stressed in his address were the following: The value of membership in the National Association, the difficulty of reaching an agreement with wholesalers concerning the code of fair competition, the fixture manufacturers' code, the hearing on the soil pipe code, the importance of sanitary laws and ordinances, Amebic dysentery—its cause and cure, and permits for all plumbing fixtures.

Mr. Calnan also gave a radio address over KFJM, the local radio station, in which he pointed out the hidden dangers of faulty design and installation of plumbing.

CONVENTION HEARS THREE OTHER ADDRESSES

Dr. E. H. French, dean of the School of Medicine of the University of North Dakota, in his address to the convention pointed out that plumbing is a great factor in lengthening the life span of man. He asserted that in the year 1900 the death rate from typhoid fever was 35.9 per 100,000 inhabitants, and that at the present time it is 4 or 5 per 100,000, and he gave the plumbing trade credit for this great progress in modern sanitation.

R. L. Anderson, president of the Minnesota State Association, attended the convention and in his address stressed the necessity of affiliation with state and national associations. He pointed out that it was proper and necessary to have stringent local ordinances, whereby the work in each locality could be supervised by local inspectors without unnecessary competition from other cities.

Rasmus Lunseth, chairman of the North Dakota Code Committee, addressed the convention on the necessity of a state code to safeguard the health of the people. He referred to the small knowledge of practical plumbing possessed by the average citizen, and he emphasized the necessity of guarding against cross connections between water supply and waste lines.

RESOLUTIONS ADOPTED

The convention adopted the following resolutions:

"BE IT RESOLVED, that we endorse the action of our National Association in endeavoring to have enacted a code of fair competition, which will give to the master plumbers adequate protection from unjust and unfair competition.

"BE IT FURTHER RESOLVED, that every member of this association use his influence to persuade our National Government, as well as city and state officials, to buy plumbing and heating materials, and make all such installations through the regular trade channels, and discourage the present practice of buying direct, and installing this material with incompetent help."

OFFICERS ELECTED

The election of officers for the ensuing year resulted as follows: President, Joseph Keller, Fargo; vice president, M. M. Sornsin, Fargo; secretary-treasurer, Peter W. Grady, Grand Forks; board of directors, Charles A. Wiley, Minot; George Casper, Devils Lake, and Frank Gallagher, Jamestown.

Fargo was chosen as the convention city in 1935.

The delegates and visitors were entertained at a banquet, and this was followed by a most enjoyable entertainment.

Rhode Island Master Plumbers Meet in Providence

THE Rhode Island State Association of Master Plumbers held its annual convention on Tuesday, April 17, in Providence, R. I., with headquarters at the Dreyfus Hotel.

The election of officers resulted as follows: President, Chester Lee of Providence; vice president, Robert Hays of Providence; treasurer, E. S. Woodmancy of Providence, and secretary, George E. Reinsant of Pawtucket.

Retiring President George Grimord gave a detailed report of the association's activities and accomplishments during the past year. He expressed great appreciation of the

Secretary George E. Reinsant

Retiring President George Grimord

hearty co-operation given him by his brother officers and members of the various committees, and in turning the gavel over to the newly elected president, Chester Lee, he stated that it was his sincerest desire to be of all possible assistance to the new officers and that he wished them a profitable and harmonious year.

National Director P. W. Donoghue, representing National President Robert J. Barrett, discussed at some length the plumbing code, stressing the importance of increasing the membership and strengthening the National Association of Master Plumbers. He stated that the closer the local associations are knit together, the better and cleaner will competition be in our industry. There never was a better time than right now to get an increase in membership. The code will probably be signed in the near future, and owing to the fact that all non-members as well as members of the Master Plumbers' associations must pay their proportional share of the code expense, non-members can easily be persuaded to join or form local associations.

The convention voted that the incoming president be given credentials and empowered to appoint delegates to the coming national convention which is to be held in Washington during the last week of May.

Vermont Master Plumbers Will Meet at Montpelier

The Master Plumbers' Association of Vermont will hold its annual convention on August 7 at Montpelier, Vt.

Appointed Plumbing Inspector in Louisville, Ky.

Jas. J. Hannan has been appointed plumbing inspector in Louisville, Ky. Mr. Hannan has been engaged in the plumbing business in Louisville for many years under the firm name of J. J. Hannan & Son, his establishment being located at 930 Baxter Avenue.

The *NEW*
OBERDORFER
Model B-2400
SUMP PUMP

A full 1/4 h. p. Induction Type Motor, 110 volts-60 cycles 1725 R. P. M.

IMPROVED FEATURES

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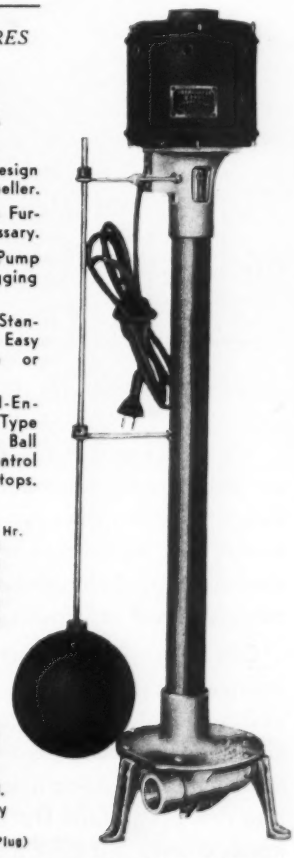
1. All-Bronze, Rust-Proof.
2. Stainless Steel Shaft.
3. Pump: Centrifugal Design With Open Type Impeller.
4. Oil-less Bearings. No Further Lubrication Necessary.
5. Large Inlet Under Pump Protected by Non-Plugging Screen.
6. Outlet Tapped for Standard 1" Fittings — Easy Connection to Pipe or Hose Line.
7. Automatic Control-Enclosed Switch Positive Type Actuated By Oversize Ball Float Connected to Control Rod With Adjustable Stops.
8. Capacities:

Head.	Gals. Per Hr.
1′	2400
5′	1900
10′	1500
15′	900
20′	400



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$37.50 F. O. B. Factory

(Complete with 8-foot Cord and Plug)

For larger capacity pump ask about OBERDORFER AUTOMATIC ELECTRIC SUMP PUMP, MODEL A-3600, with 3,600 gals. per hour at 1-ft. head to 750 gals. at 25-ft. head. LIST $60.00

Attractive Trade Discounts

M. L. OBERDORFER BRASS CO.
2309 Thompson Rd. Syracuse, N. Y.

Protect your customers and yourself by recommending

OLD DUTCH CLEANSER

... made with pure "seismotite"

Whenever you install a new sink, wash basin or bathtub, recommend that it be cleaned only with Old Dutch Cleanser. Then you may be sure that your customers will remain satisfied and that your merchandise will retain its beautiful, new luster through many, many years of satisfactory service.

Old Dutch is made with pure "seismotite" (pronounced sīs'-mo-tīte)—a scratchless cleaning and polishing material of volcanic origin. It polishes as it cleans fine porcelain, enamel and tile, and it doesn't scratch because its particles are flaky and flat-shaped, like this . Old Dutch contains none of this harsh, chunky grit found in ordinary cleansers.

MAKE THIS TEST. *Put a little Old Dutch between two pieces of glass and rub them together. You will neither feel nor hear any harsh grating, and no scratches will be made in the glass. Then try the same test with other cleansers and notice the difference.*

Doesn't Scratch

Texas Master Plumbers Hold Successful Convention

THE forty-fifth annual convention of the Associated Master Plumbers of Texas was called to order by President C. Ormond of San Antonio in the Buccaneer Hotel, Galveston, Tex., at 9 a. m., Monday, April 16, for a two-day meeting, with about 100 master plumbers in attendance.

When the addresses of welcome and acceptance were concluded, President Ormond asked R. G. Thomas to introduce H. O. Green of Tulsa, Okla., treasurer of the National Association of Master Plumbers, who extended greetings from National President Robert J. Barrett and National Secretary Frank Bentley. Mr. Green thanked the Texas Association for its fine spirit of co-operation and advised those present of the sincere appreciation of President Barrett for their great increase in membership, an increase amounting to 120 per cent over last year.

The Plumbing Code compiled by the Standardization Committee under the direction of Jere L. Murphy of New York City was called to the attention of the convention and the members were urged to make use of this document in their endeavors to obtain a state Plumbing Code for Texas.

Some of the high lights of the Manufacturers Code and their bearing on the future of the plumbing industry were explained.

The Wholesalers' Code and the Plumbing Contractors' Code were discussed by Mr. Green, who urged all members to use their influence to keep the sale of plumbing commodities moving in the now established channels.

Mr. Green gave a review of the epidemic of amoebic dysentery and urged that the members should make the facts of this infection known to all civic clubs and legislative bodies throughout the state.

COMMITTEES APPOINTED

President Ormond appointed the following committees:

Resolutions: Joseph Netzer, Laredo, chairman; A. S. Johnson, Dallas; H. O. Davis, Pampa.

Credentials: C. W. Richmond, McAllen, chairman; Ed. A. Jaekel, San Antonio.

Memorial: Harry Kahn, Dallas, chairman; Joseph Netzer, Laredo.

Auditing: H. Wharton, San Antonio, chairman; J. W. Theil, Houston.

Reading Clerk: Geo. Winbourne, Wichita Falls.

Sergeants-at-Arms: J. W. Warden, El Paso, and A. J. Witt, Galveston.

Standing Committee: R. G. Thomas, San Antonio, chairman; Joseph Netzer, Laredo.

Publicity Committee: A. J. Witt, chairman; A. J. Warren and C. C. Malitz, all of Galveston.

The report of R. G. Thomas, state executive of NIRA for Texas Master Plumbers, reviewed the activities of that office and showed that more than 2,500 letters had been sent out and that Mr. Thomas had traveled over seven thousand miles to carry information on the Code of Fair Competition for Master Plumbers. It was through the work of the state executive that many new members were added in this state.

A letter from the State Association of Journeyman Plumbers requesting the co-operation of the master plumbers in an effort to obtain a state plumbing code for plumbing was read. This letter was also referred to the resolutions committee.

The report of Secretary-Treasurer E. H. Jorden of San Antonio showed the association to be in very fine condition, both numerically and financially.

RESOLUTIONS APPROVED

The following resolutions were read and approved:

1. Expressing confidence and concurring in the actions of National President Barrett, in his endeavors to secure a code of fair competition for master plumbers.

2. Expressing confidence and appreciation in work of R. G. Thomas as state executive.

3. Concerning co-operation of master plumbers with journeymen to secure a state plumbing code.

4. To reduce state dues from $17 to $12.

14. To change the plan adopted at a convention held in El Paso by which the state was divided into ten zones. This was reduced to five.

A resolution was adopted by standing vote, giving to R. G. Thomas a life membership in the Texas Association in appreciation of his untiring efforts during many years.

Clayton Lee of Houston gave a detailed explanation of a credit system in use by his association.

A resolution was adopted to cancel all unpaid dues covering periods prior to January 1, 1934.

Several members spoke of work done under CWA on private property and urged that action should be taken to prevent this in future, the principal objection being to sewer lines extending from the mains to the houses.

H. O. Green explained that complete bookkeeping supplies which will conform to the requirements of the code can now be obtained from the National Office.

Roy R. Hofheinz of Houston spoke on the need of state laws to regulate the installation of plumbing.

President Ormond appointed a committee to revise the state by-laws, consisting of Joseph Netzer, chairman; R. G. Thomas, H. Wharton and C. Ormond. This committee will report at the 1935 convention.

ALL OFFICERS RE-ELECTED

The officers of the past year were all re-elected, as follows:

President, C. Ormond, San Antonio.

Vice President, W. H. Kuhn, Dallas.

Vice President, W. H. Warren, Houston.

Secretary-Treasurer, E. H. Jordon, San Antonio.

Delegates to the national convention to be held in Washington: C. Ormond, San Antonio; Clayton Lee, Houston; W. H. Kuhn, Dallas. Alternates: Felix Wahrmund, San Antonio; Geo. Winbourne, Wichita Falls.

Many attended the annual banquet of the New York State Association of Master Plumbers in New York City

New York State Master Plumbers Hold 46th Annual Convention

THE "Rochester Plan" of building modernization, first offered last year, received fresh life at the 46th annual convention of the New York State Master Plumbers Convention, held in New York City, April 16-18, when this association passed a resolution offered by Jere L. Murphy, New York City, that asks for the passage of Congressional Bill HR 8279 sponsored by the Honorable James L. Wadsworth of Geneseo, N. Y. This measure calls for the immediate appropriation by Congress of $500,000,000 to be loaned by the RFC throughout the Nation and allotted according to population.

Modernization, rather than new construction, is the purpose. Loans would be for five years at interest rates less than 5 per cent and borrowers need not begin repayment until two years after receiving their loans.

Another resolution, closely akin to the foregoing but restricted to Greater New York, was offered by William J. Flynn of Bronx County. By its terms the city would agree not to increase taxes on increased valuations caused by modernization for a period of five years after work was done. Its adoption was followed by sending it to Mayor Fiorello H. LaGuardia to whom it was directed.

Another resolution passed by the N. Y. State Convention was that of George Arnone, Bronx County, that would make it necessary for the Federal Government, chiefly through the PWA, to employ master plumbers instead of partially trained workmen. The Arnone resolution also favored Federal support of building rehabilitation projects at once.

Mayor LaGuardia, who opened the convention, released the cheering information that he is now trying to secure the passage of City legislation that would release $132,000,000 at once for the extension of sewers and new water mains, public building overhauling and like projects. Rejuvenation of building work he thought must be extended to construction other than public works.

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LEAD

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LEAD PIPE AND FITTINGS

THE EAGLE-PICHER LEAD COMPANY ● CHICAGO JOPLIN CINCINNATI

When you install a range boiler of unknown manufacture — and it goes bad — who's to blame? You'll say the maker, but your customer, the man whose good will you want to retain, naturally blames you.

Don't take chances. Get this: You'll never have to do a job over or hear anything but good words from the installation if you put in a boiler bearing the Pennsylvania mark.

PENNSYLVANIA RANGE BOILERS ARE BUILT BETTER—that's why they stand up. Made in 3 types: All Welded, Welded and Riveted Galvanized and Everdur Copper.

Write for more information

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Established 1895
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PENNSYLVANIA RANGE BOILERS

Harry Sugarman and N. Smith, speaking for the Manhattan Master Plumbers' Association, called attention to iniquitous legislation now seeking passage in the N. Y. State Assembly, that would permit unlicensed handymen plumbers or others directed by building owners to repair and overhaul plumbing work, both fresh water supply and soil pipe lines.

Jere L. Murphy pointed out that the proposed legislation would enable owners to perform work on 24 per cent of the plumbing system at a time until, subsequently, entire systems were overhauled. A resolution of protest, offered by Mr. Murphy was adopted.

This speaker also urged revision of the New York City plumbing code. Efforts in this direction have been thwarted for several years by real estate people and large owners. He also emphasized the fact that unless Code revision occurs New York may have an epidemic of dysentery as has occurred in Chicago and other cities.

An able defense of the wholesale method of distribution of plumbing and heating supplies was made by Arnold Behrer, president, Jobbers Credit Association, New York City.

One of the interesting features of the convention was the introduction of Mrs. Joseph O. Stapf, state president, New York State Ladies' Auxiliary, who promised support of the work of the association by the auxiliary.

National President Robert J. Barrett spoke on the National Plumbing Code and told about the many obstacles which have been surmounted. President Barrett also revealed that he had received information to the effect that Federal building contracts greater than $25,000 with equipment, including plumbing and heating, will be awarded separate from the general contract.

The National Plumbing Code was discussed in a most thorough manner, and it was generally agreed that as it now stands it does not give master plumbers the protection needed in the retail sales of plumbing materials. The discussion culminated in the adoption of a resolution offered by William J. Flynn, which authorized the transmission of the disapproval of the code to National President Robert J. Barrett, and suggested that the code be withdrawn until suitable marketing restrictions could be included.

Harry Bareham, Jere L. Murphy and George Drake were appointed by President William J. Foley, presiding officer, to go to Washington in support of the Wadsworth Housing Bill already referred to.

Another resolution passed was that placing in candidacy the name of George W. Frank of Buffalo as national vice-president in the event National President Robert Barrett is not re-elected.

The present officers of the New York State Association were all re-elected. They are:

President, William E. Foley, Richmond Hill.
Vice-President, Joseph O. Stapf, Albany.
Treasurer, John J. Dixon, Brooklyn.
Secretary, N. P. Donohoe, Richmond Hill.

John D. Cooley, Manhattan Association, reported for the sanitary committee, and Thomas J. Whalen, Queens County, reported for the apprenticeship committee.

The vast profit opportunities in the sale of gas appliances by master plumbers were explained by John I. Blanchfield, assistant vice-president, Brooklyn Union Gas Co. He stated that his company's policy is to work as largely through the plumbing trade as possible. In 1933, he also pointed out, plumbing contractors associated with the Brooklyn Union sold $600,000 worth of appliances and made $150,000.

William F. Cassidy reported for the legislative committee and Henry J. Ritter, Buffalo, for the County Code and NRA committee. The county code, according to Mr. Ritter, has assurance of passage. The resolutions committee report was read by Charles Menzinger, Brooklyn.

There was considerable meat in the technical paper read by Thomas Brennan, Brooklyn, on "Indirect Water Heating."

Massachusetts Master Plumbers Hold Fifty-first Annual Convention

"A CODE for the plumbing trade,"—the difficulties in getting it and the blessings that it is supposed to bring, once it is obtained,—this was the big item for the fifty-first annual convention of the Massachusetts State Association of Master Plumbers, which was held in Boston, at the Copley Plaza Hotel on Tuesday, April 10.

About two hundred were in attendance. The spirit shown on all sides by those present at the convention, indicates that Massachusetts proposes to go ahead.

ELECTION OF OFFICERS

The work of the association will go forward under a staff of officers made up of veterans with years of experience. The association unanimously elected the following officers:

President, Walter P. Bailey, New Bedford.

Vice President, John J. Downey, Boston.

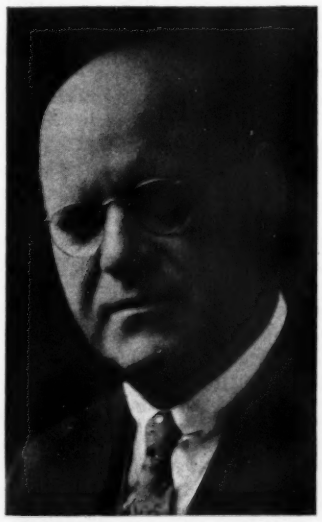
Secretary, Franklin E. Darling, Fall River.

Treasurer, J. Preston Perham, West Roxbury.

Delegates to the National Convention were elected as follows: Albert E. Roberts, past president; Walter P. Bailey, president; John J. Downey, vice president.

Alternates: Leonard J. Hickman, Newton; James A. Cotter, Boston; J. Harry McGurdy, Newton.

The sessions of the convention were presided over by President Albert E. Roberts of Boston. His first act was the appointment of P. A. Lang of Boston as sergeant-at-arms. This was his 27th year of service in this capacity, and he was called to the platform as a special token of the association's appreciation.



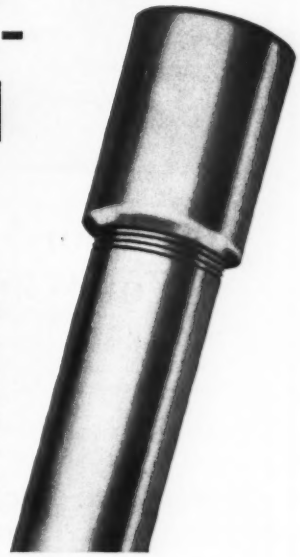
President-elect
Walter P. Bailey
New Bedford, Mass.

John J. Downey, chairman of the M. I. T. Committee, reported that "because of business conditions, our State Association has not held its annual conference with the Massachusetts Institute of Technology, and this has been as regrettable to the M. I. T. faculty as to us."

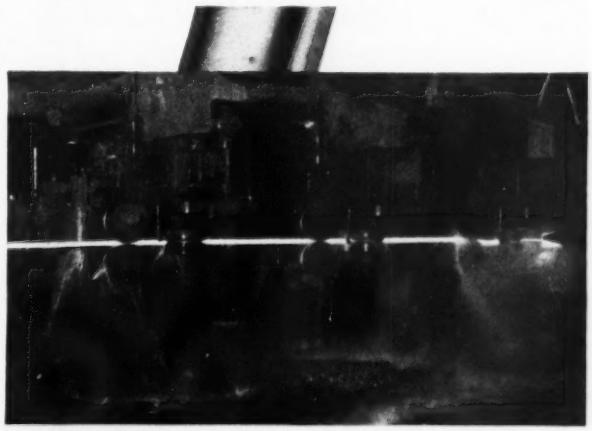
One of the finest features of the Massachusetts State Association's work is the annual two-days' program of lectures and demonstrations at the Institute, and the co operative research work that is continuing to be conducted under

there is no variation in

FRETZ-MOON PIPE



The illustration below shows the transformation of hot metal strip into welded tubing, which, after finishing operations, will become Fretz-Moon Pipe. • As the hot metal strip leaves the furnace it is slightly above welding temperature—insured to the degree by automatic control. It enters the first two pairs of rolls which form it into an open seam tube. Then, as it enters the next two pairs of rolls and has dropped to exact welding temperature, the seam is closed under pressure and the strip becomes a perfectly welded tube. The next two pairs of rolls form it to uniform size. • Perfection and uniformity are the standards to which Fretz-Moon Pipe is made. The "continuous process" with the most modern methods of speed and temperature control entirely eliminate the human element and the possibility of variation in the product. Every step in the process is rigidly controlled and perfectly synchronized with every other step. • Under such a modern method of manufacture, scientifically developed to produce nothing but a uniform product, it is not difficult to appreciate why those who once give Fretz-Moon Pipe a fair trial continue to use it exclusively.



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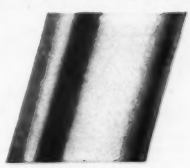

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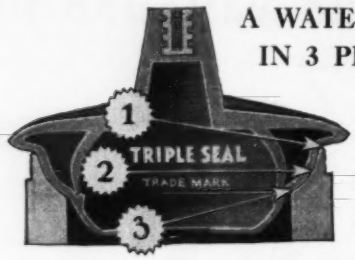
PIPE
BLACK AND GALVANIZED



A WATER-TIGHT SEAL IN 3 PLACES ON THE VALVE SEAT

1. Over upper edge
2. Against side wall
3. Against lower edge

SAVE for Yourself and Your Customers!

TRIPLE SEAL—the triple action tank ball—saves annoyance and excess water bills for your customers. And buying in 3-dozen lots, you save 30 cents on every dozen. GUARANTEED FOR FOUR YEARS and sold only through jobbers.

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NEW AND IMPROVED
TRIPLE SEAL
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NYE TOOLS

Nye Solid Skip-Tooth Dies
With Threaded Throat

The Nye feature of removing every alternate tooth in back of die to reduce friction, together with the threaded throat feature assures easy starting, and easy cutting. Made of finest tool steel, hardened and tempered in oil.

ASK YOUR JOBBER

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Professor Thomas R. Camp of the M. I. T. faculty. During the year the committee enlisted the interest of three manufacturers of sanitary ware, Crane Co., Kohler Co., and Standard Sanitary Mfg. Co., all of whom contributed liberally to the stock of fixtures essential to the carrying out of the laboratory tests in flow and discharge of water closet wastes, which are now being carried out.

James G. Gillespie, chairman of the legislative committee, gave a comprehensive report of the work he and all members of the committee had done in fighting for and against a number of bills presented to the state legislature during the three months it has been in session.

There were four outstanding addresses on the program, by the following distinguished leaders in the plumbing industry: Robert J. Barrett, president of the National Association; P. W. Donoghue, past president of the National Association; Joseph J. Crotty, president of the American Society of Sanitary Engineering, and Joseph A. Maynard, secretary of the Massachusetts Sanitary Club, and collector of the Port of Boston.

PRESIDENT BARRETT ON "THE STRUGGLE FOR A CODE"

President Barrett was introduced in a felicitous manner by P. W. Donoghue, his predecessor in office, and proceeded to present to the convention in as great detail as possible, the story of "The Struggle for a Code." Practically the same general statement has already appeared in the reports of other state conventions at which Mr. Barrett has spoken, and for that reason we will not repeat it here. It is certain, however, that as the Massachusetts men listened, they gained some degree of knowledge of what their national officers and directors had been up against, in the tremendous endeavors they have made during the past year to provide and establish a code covering the plumbing trade of the nation. And the members could but wonder what might have been the outcome if there had been no organization to make the fight.

Special mention was made of the effort to take the giving of bids out of the general contractor's hands. The point was made that inasmuch as the heating and plumbing contracts are one-fifth of the whole, the trade is entitled to have their bids made separately.

Mr. Barrett pointed out that the National Association's office in Washington had been established just in time to make the association's code work most effective.

Joseph J. Crotty, vice president of the Central Foundry Co., and president of the American Society of Sanitary Engineering, delivered a stirring address of inspirational force, which was most cordially received by the convention. His special plea was for laws for the protection of the plumbing trade, for supervision and enforcement, for reinspection of plumbing installations, and for the closest effort of the plumbing trade for the promotion of the public health.

PAST PRESIDENT DONOGHUE'S ADDRESS

No part of the day's proceedings were of greater account than the address given by Past President P. W. Donoghue.

He spoke principally of the efforts to establish a proper code. When the code is finally adopted, it will not contain every point that it should contain. The great point however, is that it will unquestionably be of greatest benefit to the trade.

Through the efforts of Mr. Donoghue, officers and directors of all the state associations of all the New England states had met in Boston on the day preceding the Massachusetts state convention, for what may well prove to have been business of the greatest importance for the plumbing industry.

The purpose as defined by Mr. Donoghue was "to discuss

and formulate plans for united action by the master plumbers of New England, in their relation with other branches of the plumbing industry, and to consider plans for organizing a code authority for the enforcement of a Master Plumbers' Code when it shall have been finally approved."

The attendance of seventy-five men had been the gratifying result of this effort.

The object aimed at is unified action for the entire group of six New England states in the regulation of the plumbing business.

Each section of the country is to have its own code authority, and enforcement is to be in their hands. Regulation of competitive bidding was one of the vital subjects coming under the jurisdiction of the code authority, which Mr. Donoghue alluded to as the Supreme Court of the Construction Industry. He felt that in such a matter as the regulation of competitive bidding, not only was the plumbing contracting trade going to be benefited, but the wholesale trade as well. He prophesied that if code results favorable to both branches of the industry could be obtained, it is possible for the plumbing trade to be lifted out of its present difficulties.

The address given by J. A. Maynard was full of optimism, but fully appreciative of the difficulties the construction industry is facing.

The 1934 convention proceedings were brought to a fitting close with a banquet in the evening, at the Copley Plaza hotel, followed by an entertainment program and dancing.

Chicago Plumbing Contractors Hold Card Party and Dance

Members of the plumbing industry comprising master plumbers and supply men with their families and friends, numbering more than 800, attended the card party and dance held under the auspices of the Plumbing Contractors' Association of Chicago on Friday, April 13. The affair was held in the 14th floor assembly hall of the Chicago Real Estate Board Building, 32 West Randolph Street, and was a social and financial success. Evidently the plumbing trade is not superstitious judging from the representative gathering which responded to the invitation of the Chicago Association.

Wm. Gawne, chairman of the arrangement committee, with Chas. Herbert, chairman of the reception committee, and Chas. E. Gawne, president of the Plumbing Contractors' Association of Chicago, were on hand early to welcome the members and guests.

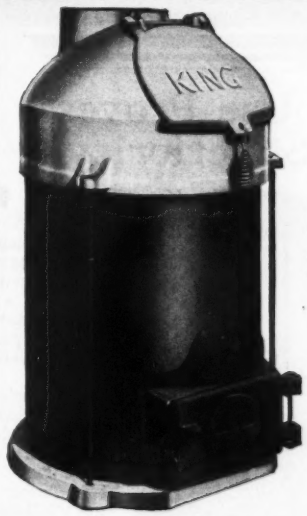
Attractive prizes were awarded to the winners at Bridge and Five Hundred, one prize for each table. This part of the entertainment was in charge of Wm. Redieske who had an able corps of assistants.

Following the card party, the floor was cleared and dancing to the strains of an excellent orchestra was indulged in until one o'clock. Leo Markowski was chief of the floor committee, assisted by Walter A. Brown.

The members of the entertainment committee were: Wm. Gawne, chairman; Chas. J. Stanley, Samuel Erman, Wm. Redieske, J. G. Zajicek, L. P. Markowski, Walter Sievers, Wm. J. Sievert, President Chas. E. Gawne, and Secretary Peter M. Munn.

Bronx Master Plumbers to Celebrate Koven Night

Members of the Bronx Master Plumbers' Association will celebrate Koven night at their headquarters, 410 East 176th Street, New York City, on Wednesday evening, May 9. The meeting will be in charge of A. R. Hanson of L. O. Koven & Bro., Inc., of Jersey City, N. J., and Emanuel Goldman, advertising counsel for this concern, will deliver an address on advertising. A Dutch lunch will be served.



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STURDY construction . . . economy of operation . . . dependability of hot water supply . . . these features of the King Tank Heater have a definite appeal for your customers. Recommend King Tank Heaters wherever the question of hot water supply arises. Write for further information.

OAKLAND FOUNDRY CO.
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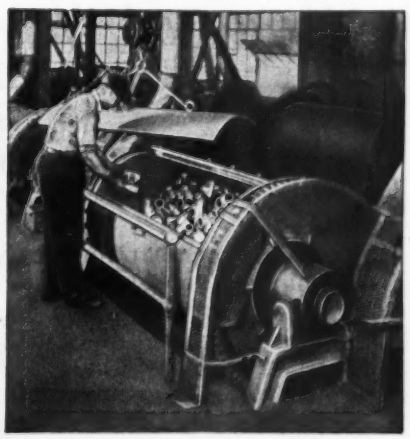
Tumble the Castings AND THE FITTINGS ARE CLEAN

DEVLIN fittings FRETZ nipples



After castings have been annealed, the next step is cleaning. The rough castings are put into a huge drum known as the Tumbling Barrel. By this means castings are rubbed together as they tumble over and over, resulting in the removal of rough edges and sand particles.

This phase of Devlin manufacture, like other Devlin operations, is performed in the most approved manner. Devlin Fittings are known for most skillful workmanship and dependable quality. Next advertisement, **Sorting and Inspection Process.** Watch for it.

THOMAS DEVLIN MFG. CO., INC.
BURLINGTON, N. J.
Manufacturers of a complete line of
DEVLIN FITTINGS AND FRETZ NIPPLES

Save this series of advertisements, they tell a complete and valuable story. If you do not have preceding advertisements, write us.

Actual Use Proves Their Superiority

Reichert tank balls and floats for every requirement assure complete satisfaction, long service and an attractive profit for you. Leader Tank Balls, well made of best materials, seat perfectly every time. A super-value priced unbelievably low.

Federal Floats resist particularly severe factory, school and public building service. Toledo Solderless and Leader Floats stand up under most abusive treatment. Write today or get the Reichert profit story from your jobber.

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A Choice of the Best

That's what you get in replies from a DOMESTIC ENGINEERING Classified Advertisement.

No matter what your problem—if you want a job, or a man for a job, if you have some used equipment to sell or want to buy some, if you want to know what the leading books on plumbing and heating are, if you want bids on a job—a DOMESTIC ENGINEERING Classified Advertisement will solve that problem.

Domestic Engineering
1900 Prairie Avenue, Chicago, Illinois

Camden County Master Plumbers Hold Joint Meeting

One of the largest meetings of the trade ever held in the southern part of New Jersey was that of the Master Plumbers Association of Camden County, held April 5 in the Walt Whitman Hotel, Camden, N. J. This organization is a combination of the Camden Master Plumbers' Association and the Camden County Association. It was the first joint meeting and 225 master plumbers were in attendance, as were managers and salesmen from the following local supply houses: Crane Co., Mott Company, Hajoca Corporation, Fleck Bros. Co., and J. D. Johnson Co., Inc.

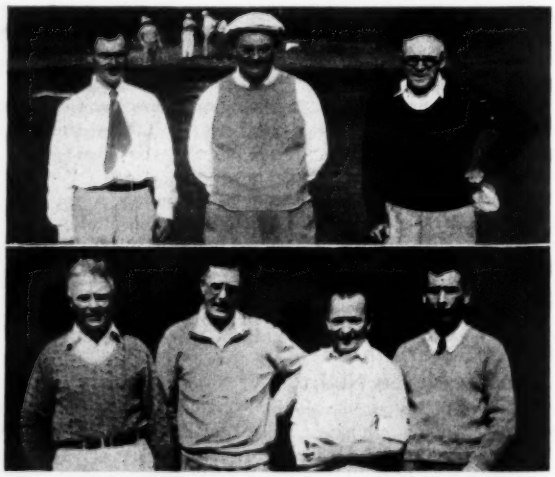
Secretary Bateson reported a paid-up membership of more than 100, and he added that he hoped to enroll 25 new members before the annual state convention. Mr. Bateson also called attention to the credit bureau which was recently established.

The newly elected officers of the association are: President, Fred W. Schorpp; vice president, Paul Eichfield; treasurer, Edward Kelley, and secretary, Jas. E. Bateson, Board of directors: Wm. J. Kelley, Camden, 1 year; Ernest E. Limroth, Westmont, 2 years; Thomas J. Milnamow, III, Collingswood, 3 years.

San Francisco Golfers Turn Out at Beresford

Perfect weather, a beautiful course, generous turnout and a delicious steak dinner were the high lights of the monthly tournament of the Plumbing and Heating Club of San Francisco and the Bay Cities, played at the Beresford Golf and Country Club on April 26. Top honors in Class A went to Jack Camp, president of the San Francisco Master Plumbers Association, whose work with the putter gave him a score of 93—14—79. Good, all-around golf in Class B enabled C. P. Hensley of the manufacturers' group to turn in a 95—19—76 card. Among the guests, B. Brace with an arbitrary handicap of 35 made the round at 71 net. This was the club's first tournament when the guests were assigned handicaps, and it is possible the idea may be followed in forthcoming tournaments.

In addition to the golfers, a number of members and guests drove down from San Francisco to enjoy the beefsteak dinner. The club is composed of representatives of all three branches of the plumbing and heating industry and allied interests.



Top row, left to right: J. E. Escalle, Donald O'Hair and F. M. Gabbert. Bottom row, left to right: C. P. Hensley, Frank Nickerson, J. V. Greer and R. P. Olsen, at the Beresford tournament of the San Francisco Plumbing and Heating Club

Convention Dates

May 5, 1934.—IDAHO—The annual convention of the Idaho Master Plumbers' Association, at Boise, Idaho.

May 5 and 6, 1934.—ARIZONA.—The annual convention of the State Association of Master Plumbers of Arizona, at Phoenix, with headquarters at the Adams Hotel.

May 7 and 8, 1934.—FLORIDA.—The annual convention of Florida State Association of Master Plumbers and Heating Dealers, Inc., at Gainesville, Fla., with headquarters at the Graham Hotel.

May 7 and 8, 1934.—KENTUCKY.—The annual convention of Kentucky State Association of Master Plumbers, at Newport, Ky., with headquarters at the Glen Hotel.

May 8 and 9, 1934.—MICHIGAN.—The forty-second annual convention of the Michigan State Association of Plumbing and Heating Dealers, in Grand Rapids, Mich., with headquarters at the Pantlind Hotel.

May 9, 1934.—CONNECTICUT.—The annual meeting of the Master Plumbers Association of Connecticut, Inc., at Meriden, Conn.

May 11 and 12, 1934.—OREGON.—The annual convention of the Oregon State Association of Master Plumbers, at Portland, Oregon.

May 14 and 15, 1934.—ALABAMA.—The annual convention of the Alabama Association of Master Plumbers, at Montgomery, Ala.

May 15 and 16, 1934.—INDIANA.—The annual convention of the Indiana Association of Master Plumbers, at Indianapolis, Ind.

May 18, 19 and 20, 1934.—NEW JERSEY.—The annual convention of the New Jersey State Association of Master Plumbers, at Atlantic City, N. J., with headquarters at the Hotel Madison.

May 21, 1934.—TENNESSEE.—The annual convention of the Associated Master Plumbers of Tennessee, at Chattanooga, Tenn.

May 21 to 24, 1934.—CALIFORNIA.—The annual convention of the California State Master Plumbers' Association, at Sacramento, Calif., with headquarters at Hotel Senator.

May 22-25, 1934.—H. P. A. C. C. N. A.—The annual convention of the Heating, Piping and Air Conditioning Contractors National Association, at Atlantic City, N. J. Headquarters will be at the Ambassador Hotel.

May 26 and 27, 1934.—WASHINGTON.—The annual convention of the Washington State Association of Master Plumbers, at Bremerton, Wash., with headquarters at the Enetai Hotel.

May 28 and 29, 1934.—MONTANA.—The annual convention of Montana Master Plumbers' Association, at Miles City, Mont.

May 28, 29, 30 and 31, 1934.—N. A. M. P.—The Fifty-second Annual Convention and Exposition of the National Association of Master Plumbers, at Washington, D. C. The convention and the exposition will be held in the Washington Auditorium. Headquarters at Mayflower Hotel.

June 12, 13, 14 and 15, 1934.—N. D. H. A.—The twenty-fifth annual convention of the National District Heating Association at Rochester, N. Y.

June 18, 19 and 20, 1934.—PENNSYLVANIA.—The annual convention of the Pennsylvania State Association of Master Plumbers, at Uniontown, Pa., with headquarters at the White Swan Hotel.

June 20-22.—A. S. H. V. E.—The American Society of Heating and Ventilating Engineers' semi-annual meeting at The Inn, Buck Hill Falls, Pa.

August 7, 1934.—VERMONT.—The annual convention of the Master Plumbers' Association of Vermont, at Montpelier.

Chicago Beats Milwaukee in Return Bowling Match

The Bowling Team of the North and West Side Master Plumbers' Pleasure Club in the return bowling tournament held at Milwaukee April 19, beat the Milwaukee master plumbers by a score of 2,495 to 2,374. It was one of the few times in recent years that Chicago has captured the honor and they naturally felt highly pleased with their feat.

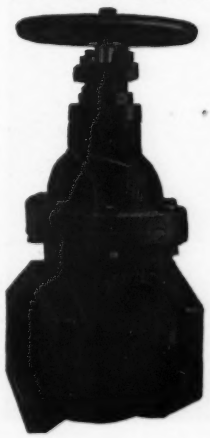
Steve McCarthy, with a total score of 584 for the 3 games, was high man on the Chicago team with Perry Larsen second with 547.

On the Milwaukee team George Stoehr with an even 600 was first and Ben Winninger with a 502 was second.

Milwaukee's second team with a score of 1,012 won from

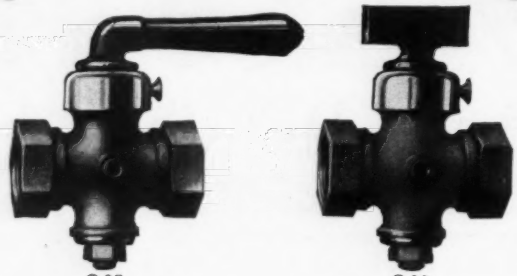
Acid Devils
The little demons that eat away pipe, cause leaks and breakdowns just where they make the most trouble . . . you can chase away forever with DURIRON.
THE DURIRON COMPANY, Inc.
410 N. Findlay St. Dayton, Ohio
DURIRON
ACID PROOF
DRAIN PIPE

KENNEDY
VALVES-PIPE FITTINGS-FIRE HYDRANTS



AS a thoroughly reliable gate valve for moderate steam and water pressures, you can't beat Kennedy Figure 57, the standby of thousands of contractors and engineers all over the country. Its simple, sturdy mechanism and its strong well-designed body have stood the test of time in innumerable installations. Like all Kennedy Products, these valves are generously proportioned, made of carefully selected materials and accurately machined to assure easy installation and easy operation. Be sure to insist upon Kennedy Gate, Globe, Angle or Check Valves and Kennedy Malleable Iron, Cast Iron, or Brass Pipe Fittings. You will find them reasonably priced and thoroughly satisfactory in every respect.

THE KENNEDY VALVE MFG. CO.
Elmira, N. Y.
Warehouses and Representatives in Principal Cities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EXTRA GRADE ADJUSTABLE LEVER AND TEE HANDLE CAP PATTERN GROUND KEY STOP & WASTE

Kitson makes a full line of GROUND KEY GAS STOPS; COMPRESSION STOPS AND WASTES; BOILER DRAW-OFFS—and the well known line of Lovekin "Safety" Valves. Literature and prices upon request.

Insist upon the name "Kitson." Remember, Kitson Products are distributed through Plumbing Jobbers and Wholesalers.

KITSON CO.
WESTMORELAND & STOKLEY STS.
PHILADELPHIA PA.

Address Department "D"

MADE FOR LONG RUGGED SERVICE

Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.
Tempered Steel

The Worcester line is complete. Catalog gladly sent upon request.

WE DO OUR PART

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS.

their Chicago opponents who had 948 and Milwaukee's third team also won from Chicago by a score of 986 to 914. The salesmen from Milwaukee were also winners against the Chicago salesmen by the narrow score of 2,460 to 2,420.

Forty master plumbers and supply men made the trip from Chicago, some going on the North Shore Electric Line and others by automobile.

The tournament was held at the Pythian Castle, 20th and National Avenue, Milwaukee, and in addition to the Chicago men was participated in by an equal number from Milwaukee. Following the tournament the visitors were the guests of the Milwaukee Master Plumbers' Association at a dinner.

At this function Fred Kuetemeyer of Milwaukee acted as toastmaster, and those called upon for brief remarks during the evening were Henry P. Reger, president, and Rupert J. Weber, vice president, respectively, of the Illinois Master Plumbers' Association; Walter W. Sievers, president of the North and West Side Master Plumbers' Pleasure Club; Chas. A. Dreier, Wm. F. Hildeman, Wm. Redieske, Joseph Comer of Crane Company, Elmer Fane, Milwaukee representative of Crane Company; Jacob Schuh and Lewis Friend, both of Milwaukee.

The prize winners on the various teams were as follows:

First Team		Third Team	
George Stoehr	600	Jos. Brah	335
Steve McCarthy	584	H. H. Diedesch	307
Perry Larsen	547	W. Sorgel	289
E. C. Wagner	507	G. Sorgel	286
Second Team		**Salesmen Team**	
Al. Boettcher	343	Fred Wagner	560
Paul Grunow	340	Herman Theis	548
Leo Markowski	336	F. K. Doppelman	535
Leo Arizinski	321	H. Luedke	505

Leather Medal: John Savadel, 357.

New Trade Literature

Catalog of Seamless Steel Fittings for Welding

Taylor Forge and Pipe Works of Chicago, Ill., has issued a catalog of seamless steel fittings for pipe welding, consisting of 64 pages, 8½x11 in. in size, illustrating and describing in detail its line of seamless steel fittings including forge weldells, full branch welding tees, reducing tees, concentric and eccentric reducing nipples, welding caps, welding sleeves, Van Stone stub ends and forged steel flanges. Many charts and several tables of dimensions and weights enhance the value of this catalog.

Catalog of Floor and Roof Drains

Fleming Mfg. Co. of Chicago, Ill., has issued its 1934 catalog, F-2, consisting of 52 pages, 8½x11 in. in size. This catalog illustrates and describes in detail this company's large line of drains and traps to meet every requirement for modern building construction. Among the items to which most space has been given are adjustable drains, areaway drains, back water sewer valves, brewery drains, garage drains, laundry drains, roof flanges, flat roof drains, and concrete roof drains. This company has sales offices in 30 leading cities in U. S. A., and in 20 of the larger cities in Canada.

Catalog of Copper Tubes and Fittings

The American Brass Company of Waterbury, Conn., has issued a 24-page catalog illustrating and describing its Anaconda copper tubes and fittings for threadless connections, water distribution, heating and air conditioning lines as well as underground installations. One section of this catalog is devoted to a description with illustrations of cast bronze solder fittings in all sizes from ⅜ in. to 4 in., inclusive. Another section is devoted to copper water tubes with solder fittings. Suggestions for assembling deoxidized copper water tubes with cast bronze flared tube fittings are also included in this catalog, as well as many tables with roughing-in dimensions. Accessories, such as solders, fluxes, copper traps and flanging tools, are also illustrated and described in detail.

ACTIVITIES

By DOROTHY EDWARDS

National President's Last Bulletin Before Convention

Mrs. Louise Liss, president, Women's Auxiliary, National Association of Master Plumbers, has just sent out a third bulletin to auxiliary members. This will be the last one before the convention. It is in part as follows:

"I hope that all of the auxiliaries have had a successful year and are now turning their thoughts to our National Convention to be held in Washington, D. C.. May 28-31, this year. The convention was set forward a whole month on account of the weather being more delightful the last part of May than in June. We will have a lovely program and a very interesting convention and I hope as many of you as possible will attend. I shall write to President Barrett asking him whether it can be arranged for our auxiliary to meet President Roosevelt—so you see, we might all get a chance to talk to our President.

"I hope that each one of us has gotten something worth while out of our auxiliary this past year, and, I am confident that the coming year will be much better. I am looking forward to a reunion with as many members as can find it possible to come to the convention."

Missouri Auxiliary Holds Annual Convention

The Women's Auxiliary to the Missouri State Association of Master Plumbers held its annual convention April 9 and 10 at Hotel Jefferson, St. Louis, Mo., in connection with the golden jubilee convention of the Missouri Association, and elected the following officers for the ensuing year: President, Mrs. Henry Bartosch, St. Louis; first vice president, Mrs. Harry De Largy, St. Louis; second vice president, Mrs. J. J. Kokesh, Chesterfield; third vice president, Mrs. Henry Fienup, Wellston; treasurer, Miss Mary Kokesh, Chesterfield; secretary, Mrs. Dan Hannegan, St. Louis, and historian, Mrs. Ira E. Henderson of Kansas City.

Chicago South Side Auxiliary Plans Party

The regular meeting of the South Side Women's Auxiliary of Chicago was held at the Broadview Hotel on April 4 with Mrs. Compton presiding. There were 28 members and 3 guests present. After a lovely luncheon, the business meeting followed, at which time Mrs. Compton asked the members to increase the membership and told of a $10 prize to be given to the auxiliary with the largest increase.

Plans were completed for a birthday party to be held on May 2 at the Broadview hotel.

Each auxiliary has been asked to give a party for the benefit of the Student Loan Fund. Mrs. O. Larson is planning a party for this benefit sometime in May.

Following the business meeting, cards were played with the 500 prize going to Mrs. Hudon and the bridge prizes going to Mrs. McHugh and Mrs. Quinlan.

Denver Auxiliary Entertained at Home of Mrs. J. P Brickey

On April 7, a very delightful time was enjoyed by the members of the Denver, Colo., Women's Auxiliary at the home of Mrs. J. P. Brickey, with Mrs. M. Fryberger and Mr. Adshade as hostess and host. Cards were played with high honors going to Mrs. C. R. Cooper and Mr. F. X. Bordeau. There were 32 present to enjoy the delicious sandwiches, pickles and individual pies and coffee.

On March 27 a farewell party was given to Mrs. F. Hanlin, who left for St. Louis to make her home there. Luncheon was served by Mrs. Brickey, hostess, and later cards were played.

Handkerchief Shower Feature at Salem Meeting

Mrs. J. A. Bernardi recently entertained the members of the Salem, Ore., Women's Auxiliary at her home. During the business meeting, Miss Mary Schoettle, who is leaving for California, resigned her position as secretary, and Mrs. Milo Rasmussen was appointed to fill the vacancy. Mrs. M. Pearce was selected publicity chairman.

A handkerchief shower for Miss Schoettle was a feature of the afternoon. As Mrs. Bernardi was celebrating her birthday that day, the ladies presented her with a lovely Easter lily. The rooms were decorated with baskets of spring flowers and the tea table was centered with a large basket of flowers and yellow tapers in crystal holders.

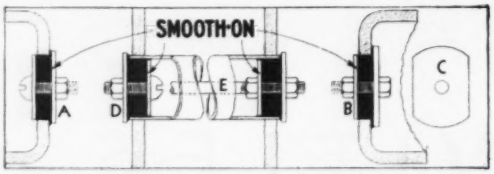
Date for Queens Borough Charity Party Changed

The regular monthly meeting of the Ladies auxiliary of the Queens, N. Y., Master Plumbers Association was held on Wednesday, April 4, at the K. of C. Hall, Jamaica, Long Island. The date for the charity card party to be held at Tillson's Amber Lantern, Flushing, L. I., has been changed to May 12. Refreshments were served at the close of the business meeting.

Philadelphia Auxiliary Plans Birthday Party

The Ladies Auxiliary to the Philadelphia, Pa., Master Plumbers Association met on April 5 for its monthly meeting. The committee arranging for the yearly birthday party reported everything in readiness. After the regular business was disposed of, cards were played with prizes for the winners. The members of the auxiliary accepted the invitation from the men's association to join them in a buffet luncheon after the meeting. Hostesses for this meeting were: Mesdames Hicks, Jacoby and Jacoby. The next meeting will be held on May 3 at 1938 Market Street.

Mrs. M. J. Feeney, who is chairlady of the committee in charge of the birthday party, entertained the members of her committee at a luncheon at which final arrangements were made.



Efficient sealing plugs that are easy to make

Plugs made with Smooth-On No. 1 and applied as shown are *perfect* closures for small circular openings, for abandoned connections or for blanking out split or punctured tubes. Only plain washers with a bolt or machine screw and nut are required to squeeze the Smooth-On into tight contact, and in most instances the plug can be preassembled complete. Shoving into place and tightening the nut completes the job in two minutes. *The seal is permanent* because expansion of the Smooth-On in hardening makes the plug and its seat virtually one solid piece. The projecting threaded bolt end may be backed off if objectionable.

Smooth-On No. 1 is ideal for making dozens of equally dependable emergency and routine repairs—in all instances with a saving of time, labor and expense that can be obtained in no other way.

Write for the Smooth-On Handbook and get Smooth-On No. 1 in 1 or 5-lb. can or 25 or 100-lb. keg from your dealer or if necessary direct from us.

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574 Communipaw Ave.
Jersey City, N. J.

Do it with SMOOTH-ON

For

FAULTLESS SERVICE

Install

"ACME" BIBB WASHERS

MADE of an extra tough black rubber compound which withstands the action of extremely hot water or cold water, "ACME" Bibb Washers will provide your customers with years of faultless service. "ACME" Bibb Washers eliminate for once and for all the annoyance of faucet rapping and chattering. For your convenience keep "ACME" Handipak in your kit. It contains a complete assortment of 100 sizes. Write for details.

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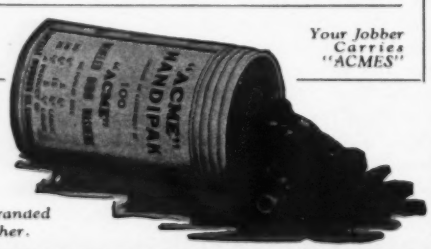
Your Jobber Carries "ACMES"



The Name "Acme" is Branded on Every Washer.

Cincinnati Auxiliary to Have Card Party

The Cincinnati Women's Auxiliary of Master Plumbers held its regular meeting in the conference room of the Building Industries Building, Plumbers' headquarters, April 3. Mrs. George Doench, president of the auxiliary, appointed the following ladies to make arrangements for a card party to be held April 30th at the Union Gas and Electric Co.'s auditorium: Mrs. Orin Mason, chairman, assisted by Mrs. Victor Wegelin and Mrs. Edward Frank. After the card party there will be a lecture, and tea will be served by the Union Gas and Electric Co.

Rochester Auxiliary Keeps Up Its Activities

Thirty-nine attended a luncheon held by the Ladies Auxiliary of Rochester, N. Y., on April 11 at the Green Gable Tea Room. A short meeting was held and cards played later.

Rock Island-Moline Auxiliary Holds Successful Card Parties

The Rock Island-Moline, Ill., Women's Auxiliary met at the Elks Club on April 10 with Mrs. J. W. Ward, hostess. The members voted to contribute to the Student Loan Fund. Proceeds of the card parties held at the homes of the members were turned over to the treasurer. A goodly sum was realized.

Bridge was played following the business session. Mrs. J. P. Cunningham, Mrs. E. L. Householder and Mrs. A. N. McNeil won highest honors. Refreshments were served at the conclusion of the games.

The next meeting will be held May 14 at the home of Mrs. C. C. Rosenfield, Rock Island.

Detroit Auxiliary Celebrates Double Birthday

The March meeting of the Detroit, Mich., Auxiliary was a doubly attractive one since it was the occasion of a surprise birthday party for Mrs. Nellie Hughes, corresponding secretary, and it was the 14th anniversary of the auxiliary. The luncheon table was set for 20 and was beautifully decorated with candles, flowers and two lovely birthday cakes made by Mrs. Esslinger and Mrs. Brabyn. A delicious lunch was prepared by Mrs. Collard who was assisted by some of the other members. After the luncheon, President, Mrs. Schonhofen, graciously presented Mrs. Hughes with a box of lovely lingerie and a card signed by all the members. Following this, the business meeting was called to order and plans discussed for the remainder of the year.

South Shore Auxiliary Elects Officers

The Women's Auxiliary of the South Shore Master Plumbers of Wisconsin met recently at the home of Mrs. L. G. Pugh in Racine. Eleven members were present and elected the following officers for the ensuing year: Mrs. Mary Robb, South Milwaukee, president; Mrs. John Feiner, Racine, vice president; Mrs. Otto Beetcher, Racine, treasurer; and Mrs. Frank DeLonge, Racine, secretary. During the meeting, state and national dues were paid. Refreshments were served and enjoyed.

Portland, Ore., Auxiliary Aids Students' Loan Fund

The Women's Auxiliary of Portland, Ore., held its regular monthly meeting recently at the home of Mrs. S. Muirhard, with eighteen members in attendance. At the business meeting the auxiliary voted to send $15.00 to the Students' Loan Fund. Later a luncheon was served and cards played.

The Old Metal Market

New York

(Dealers' Buying Prices, Cents a Pound)

No. 1 Heavy copper and wire	6.50	to	6.62½
Light copper	5.62½	to	5.87½
Heavy yellow brass	3.75	to	4.00
Clean light brass	3.25	to	3.50
New brass clippings	5.00	to	5.25
Zinc	2.25	to	2.50
Aluminum turnings, borings	5.25	to	5.50

Pittsburgh

Crucible copper	6.37½	to	6.62½
Heavy copper and wire	6.00	to	6.25
Light copper	5.75	to	5.87½
Red brass (No. 1 comp.)	5.50	to	5.75
New brass clippings	5.00	to	5.12½
Cocks and faucets	4.50	to	4.75

Cincinnati

Crucible copper	6.25	to	6.50
Heavy copper and wire	5.75	to	6.00
Light copper	5.25	to	5.50
Red Brass	5.25	to	5.50
Heavy yellow brass	3.25	to	3.50
Light brass	2.75	to	3.00
New brass clippings	5.00	to	5.25
Scrap zinc	2.25	to	2.50
Block tin	44.00	to	45.00

Cleveland

Crucible copper	6.50	to	7.00
Heavy copper and wire	6.25	to	6.75
Light copper	5.50	to	6.00
No. 1 Composition red brass	5.50	to	6.00
Heavy yellow brass	3.75	to	4.00
Light brass	3.25	to	3.50
New brass clippings	5.25	to	5.50
Cocks and faucets	4.00	to	4.50
Zinc	2.25	to	2.75
Block tin pipe	43.00	to	46.00
Solder joints (close cut)	6.00	to	7.00

Chicago

No. 1 Heavy copper and wire	6.37	to	6.62½
No. 2 Heavy copper and wire	5.87½	to	6.12½
Light copper	5.12½	to	5.37½
No. 1 Composition red brass	5.12½	to	5.37½
Heavy yellow brass	3.75	to	4.00
Light brass	3.12½	to	3.37½
New brass clippings	5.12½	to	5.37½
Cocks and faucets	4.12½	to	4.37½
Old zinc	2.25	to	2.50
Solder joints (close cut)	4.50	to	5.00
Block tin pipe	40.00	to	42.00

St. Louis

Crucible copper	6.50	to	6.75
Heavy copper and wire	6.25	to	6.50
Light copper	5.50	to	5.75
No. 1 Composition red brass	5.25	to	5.50
Light brass	3.25	to	3.50
New brass clippings	4.75	to	5.00
Zinc	2.75	to	3.00
Block tin pipe	46.00	to	47.00
Solder joints (close cut)	7.00	to	7.50

Detroit

Crucible copper	6.50	to	6.75
No. 1 Heavy copper and wire	6.25	to	6.50
Light copper	5.25	to	5.50
Red brass (No. 1 comp.)	5.00	to	5.50
Heavy yellow brass	3.50	to	3.75

Look for the *Arm-and-Hammer*

ARMSTRONG BROS.

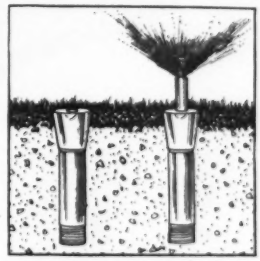
Better PIPE VISES

ARMSTRONG BROS. Hinged and Open Side Vises are lighter, handier, stronger and quicker-action than ordinary vises. They are built for years of service. Bodies are Certified Malleable Iron. Replaceable jaws are tool steel with milled teeth. Screws are special steel with double-wear threads, and handles have oval ends that will not pinch hands. The hooks of the Hinged Vise are unbreakable drop forged steel. They are built for men who know vises.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave., CHICAGO, U. S. A.
New York Sales Office: 109 Lafayette St.

Write for Catalog

ATTENTION
Master Plumbers
Efficient—Economical



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To the plumbing contractor *"Niagara"* has opened big new avenues of profit which he cannot afford to disregard.

The *"Niagara"* incorporates numerous advantages which will be immediately appreciated by home-owner and plumber alike. We will be pleased to furnish you with the details which may put you in line for this profitable business. Write us at once.

THE NIAGARA IRRIGATION CO., OLMSTED FALLS, O.

FOR BIG JOBS

WHETHER for a large job or a small one, specify Dart Unions for dependable service and long life. The two bronze seats are your positive assurance against leaks.

FOR SMALL JOBS

Specify **DART**

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Canadian Factory, Dart Union Company, Ltd., Toronto, Canada

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on
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to get your copy of
OIL BURNER HEATING
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THE *"Gold Coast"* BAR

At Last!

The BAR for a repeat trade

HISTORY TELLS US that the famous bars of the past were famous only because they were able to draw back large numbers of patrons, again and again.

History will repeat itself! In time, in every city, town and village, customers are sure to seek out some ONE BAR to the exclusion of most of the others. The GOLD COAST BAR, pictured above, has just that modern feeling and individuality all worth-while patrons demand of the bar about which they gather frequently, and to which they bring their friends. Why not make it YOUR BAR?

Though luxurious in its appointments, it is built for service and long life. Our fifty years' experience in the designing and building of high-class bars insures this. It has all the latest "built-in" features so characteristic of Bastian-Blessing products. The price is far less than you would expect it to be.

BASTIAN-BLESSING COMPANY
244 East Ontario Street Chicago, Illinois
Manufacturers of Approved Dispensing Equipment for Half a Century

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Please send me without obligation your latest literature on Bar Equipment. The length of the bar in which I am most interested is _____ feet.

Name .....
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BEER *and* BAR EQUIPMENT

SECTION OF DOMESTIC ENGINEERING

Importance of Plumbing for Bar Installations

As an indication of how important is the subject of plumbing and sanitation provisions in connection with establishments for the dispensing of beer and liquor, we have the following letter from a reader who has been active on this subject in Louisville, Ky. Among other things he says, "I am enclosing a copy of all rules and regulations which I think are self-explanatory. We have here requirements for what we think is the most modern waste disposal system for a beer dispenser. A fresh air inlet is required on the waste serving the bar and its sink. This draws fresh air in at every discharge of the sinks, therefore eliminating the odors as well as constantly drying the waste. Our typical double sink calls for hot water washing provisions on one side and chlorine sterilizing provisions on the other side. Obviously, the sink is vented to the outside as usual. We are having quite a bit of success with our system."

The above mentioned waste disposal system includes the feature of discharging into an open receptacle inside of the building in which it is installed.

The Kentucky State Board of Health recommended sanitation requirements for beer dispensing establishments to which this reader refers are reproduced in part as follows:

Any public place . . . used for the . . . sale or dispensing of any food shall be properly and adequately lighted, drained, plumbed and ventilated, and shall be conducted with strict regard to the influence of such conditions upon the health of . . . empolyees and the purity and wholesomeness of the food . . . sold or distributed.

The floors, side walls, ceilings, furniture, receptacles, implements and machinery in every . . . place where . . . food is sold or distributed . . . shall at no time be kept or permitted to remain in an unclean, unhealthful or insanitary condition; . . . insanitary conditions shall be deemed to exist if the food in the process . . . of sale or distribution is not protected from flies, dust, dirt, . . . and all other foreign on injurious contamination; or if the . . . waste products subject to decomposition . . . are not removed daily, and if all utensils or machinery . . . are not cleaned daily, or if the clothing of employees . . . is unclean.

Every place used for the sale . . . of food shall have an impermeable floor . . . which can be flushed and washed clean with water.

Every place . . . occupied . . . for the sale . . . of a food product shall have adequate and convenient toilet rooms, lavatory or lavatories.

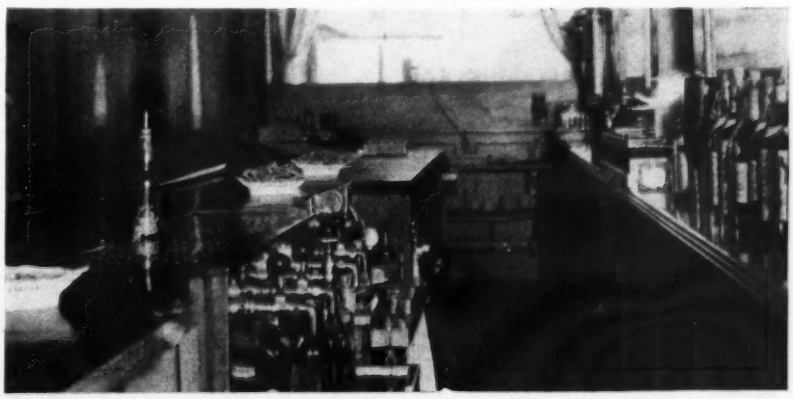
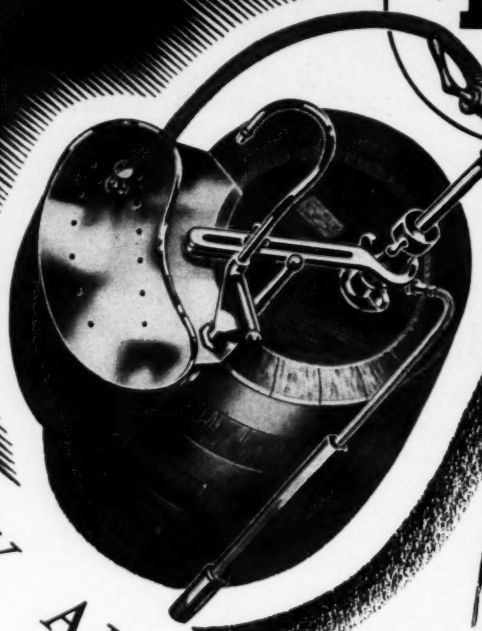


Fig. 1—"All establishments dispensing beer shall be equipped with facilities for the proper washing and sterilizing of utensils used therein"

A Genuine PEERLESS... Portable • BEER • COOLER

COMPLETE ONLY $19.50 F.O.B. DETROIT



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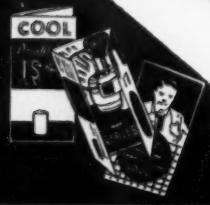
...For the first time in history, here is a Genuine Peerless Cooler selling below $30.00...way below. • Genuine Peerless quality all the way through. • It's made for a volume market and a volume market is made for it by the launching of the biggest sales promotion plan ever put behind an item of this nature. • This year, beer will be more popular than ever and cool draught beer is always better and less expensive. • Turn that amber flow to gold. • We'll show you how. • Write for our new super-profit plan.

NEW YORK SALES OFFICE: 747 General Motors Building.



IN THESE MAGAZINES
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American Golfer
American Magazine
New Yorker
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Spur
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Elk's Magazine.

Tappan Peerless Systems

AMERICAN TAP BUSH COMPANY • DETROIT, MICHIGAN
Manufacturers of Beer Handling Equipment for over 38 years and makers of the famous Peerless Taps and Bushes.

Fig. 2—"Coils used for the purpose of dispensing beer must be kept in a clean and sanitary condition at all times and provision must be made for the cleaning of such equipment"

The above statements give those sections of the Food Sanitation Law that apply to the dispensing of beer or other soft drinks. The equipment used in the dispensing of beer by draught is a particular type of equipment, and it is within the power of the State Board of Health to adopt rules and regulations covering such equipment. The following recommendations are made in order that all dispensers of beer can conform to the requirements of the before mentioned law.

All compressors used to deliver air to equipment for the furnishing of draught beer or any other type of draught beverage shall be equipped with air filters, and the air must be taken above the ground level and from the outside of the building. All compressor parts that come in contact with air delivered to the beverage must be constructed of non-corrodible metal.

All faucets and other equipment used to dispense beer or any other soft drink must be of a type that is easily cleanable throughout and must be of tin or silver plated, or of some other type of non-corrodible metal. The inside of all such faucets and equipment shall be smooth and easily cleaned with a brush.

CARE OF COILS

Coils used for the purpose of dispensing beer or other soft drinks are neither approved nor disapproved Such coils must be kept in a clean and sanitary condition at all times and provisions must be made for the regular cleaning of such equipment.

All establishments dispensing beer or other soft drinks shall be equipped with facilities for the proper washing and sterilizing of utensils used therein. Such equipment for washing and sterilizing facilities shall be provided with proper waste disposal.

All plumbing connections and all plumbing installations in an establishment dispensing beer or other soft drinks must conform with the State Plumbing Law, and the requirements of the State Food Sanitation Act.

While on the subject of eating and drinking establishments, it might be of interest to recall that important period in history, which no doubt was influential in promoting eating and drinking places.

WHAT HISTORY SHOWS

The period referred to takes us back to the England of the Queen Anne Period, from the latter part of the seventeenth century to the early middle of the eighteenth. The three popular types of eating and drinking places catered to were the coffee house, club, and tavern.

Perhaps the most important of the three was the coffee house as it formed a neutral meeting ground for men of all conditions. No decently attired person was refused admittance, provided he laid down his penny at the bar. The coffee houses were chiefly characterized as the "centre of news, the rendezvous for appointments, the lounge of the idler and the mart for business men." Here coffee was cheap, service prompt and willing, and a free and easy atmosphere made all feel at home.

The next in importance was that of the numerous clubs which naturally were more exclusive than the coffee

houses. There were clubs for men having the same intellectual tastes, some for those having common business pursuits, even some for those having similar endowments in pounds of flesh, and many others.

The taverns were chiefly patronized by men of society and primarily used as a means for entertaining as the homes provided few conveniences for same. The dinners were the best that could be obtained. Here hilarity prevailed, and drinking in excess was a trifling incident.

FOUR DIVISIONS OF EATING PLACES

It is not necessary to discuss the various changes which naturally took place in the periods which followed. To do so would require a very lengthy discussion. However, the speedy progress made in other lines of endeavor throughout the years naturally influenced changes in food service requirements, and many new types of eating and drinking places were necessarily added from time to time.

The places which may combine eating and drinking facilities are under four main divisions—hotels, certain classes of restaurants, certain classes of clubs, and commercial vessels.

Hotels may be divided into three different classes, namely, commercial, residential and recreational. Associated with these classes we may also list taverns and inns. The most important of them all is the so called commercial hotel.

The term commercial hotel applies to hotels known as the urban hotel and the average hotel where full day and night service is maintained. Urban hotels are naturally found in our large cities while the other may be found in cities and towns of almost any size.

The number of rooms in the hotel does not necessarily determine the restaurant capacity or the food service space required. There are other important factors which are equally as important.

The location of the hotel and the class of patronage form an important factor in determining the restaurant capacity. A 500-room commercial hotel located in a busy business section would require more restaurant capacity than one of the same number of rooms and located out of the business district. High-class patronage would also require more food service facilities than the other classes.

Residential or apartment hotels are intended primarily to offer permanent facilities for family life. There are four primary types of service, namely, apartments with domestic kitchens or kitchenettes, apartments with pantries depending on food service from some central kitchen, apartments with central restaurant service, and apartments for bachelors.

NAME TAVERN MISUSED

Many of the existing apartment hotels, having restaurant facilities depend on some outside trade. The question as to whether or not the particular apartment hotel project should include restaurant facilities to take care of any great amount of outside trade can only be solved after a careful study of the various existing local conditions. Regular waiter service dining rooms, coffee shops, tea rooms, banquet rooms, and private dining rooms are best suited for apartment hotels requiring restaurant facilities, and like the commercial hotel, the type and number depending on a careful analysis of the project. Dining facilities for help must naturally be included.

Taverns and Inns: It is a fact that the name tavern is very often misused. Its true meaning and purpose is to provide accommodations for travelers as well as being a place where various drinks may be had. In fact, both

Fig. 3—This illustration shows a bar installed in Chicago, the quality of which speaks for itself

DISCARD THE OLD WAYS WELCOME THE NEW

Headache **Dysentery** **Heartburn** **Nausea**

Removed from beer coils, by Universal Method after being cleaned the old way. Chain Cafeteria Manhattan.

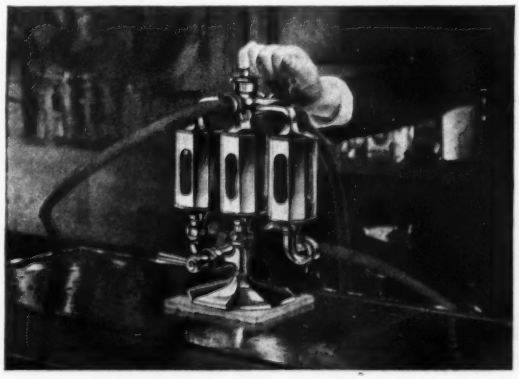
Taken from beer coil by Universal Method in cafe Hoboken, New Jersey. Proprietor complained about the beer.

Out of beer coils cleaned the old way then removed by Universal Method. Dispenser Philadelphia.

Universal took this from beer coils in Brooklyn Hotel that had been cleaned the old way.

HOW THE UNIVERSAL METHOD OPERATES. With the ordinary water pressure, small rock crystal pearls, especially adapted, are forced through the coils.

The whirling motion of the pearls plus the water pressure has a scouring action that removes the accumulated slime and muck. Half inch sponges are then rotated through the lines which have a swabbing or polishing effect, removing all loosened material from the crust or Beer Stone leaving it clean and free from foreign substances.



The New Way, Universal
NO ACIDS—NO CHEMICALS—NO STEAM

Fine mesh screens in the top of each cylinder head catch the pearls and sponges, allowing the dirt and slime to pass through to the drain.

Pit holes and cavities are removed. The surface is smooth and slick making it difficult for yeast deposits to accumulate.

The Brewmaster's Friend

WRITE TODAY

Let us show you how plumbers can make money with Universal.

BEER UTILITIES CORP.
OF AMERICA

53 East 25th St.
New York City

DE-2

Beer Utilities Corp. of America
53 East 25 St., New York City

Please send details of the Universal Method of Cleaning Beer Coils.

Name .....

Address .....

TO AVOID
Come-backs
SPECIFY
Rundle-Spence

NO beer equipment dealer can afford to jeopardize his reputation by selling or installing dispensing equipment of questionable worth. Especially is this true when the Rundle-Spence line of quality products is available to him. By specifying Rundle-Spence dispensing equipment on every beer installation he is not only assured of a worthwhile profit on each job but he is also assured there'll be no costly comebacks to eat up his profit. Catalog describing the complete Rundle-Spence line of Brewery Fittings and Beer Dispensing Equipment will be gladly sent you upon request.

Picnic Pump with Peerless Bock Tap

RUNDLE-SPENCE MFG. COMPANY
445 N. 4TH ST., MILWAUKEE

The Milwaukee Famous Keg Top Cooler
62 Years of Brass Manufacturing Experience

CURTIS Beer Equipment

Outstanding
QUALITY
Makes It Easy to Sell

CURTIS Beer Pumps

Compact (vertical or horizontal tanks). Precision made. Reflect our 40 years experience in building air compressors. Air strainer on intake, quiet, rubber mounted, V-belt drive, wick-oiling. Uses Po-Ri-Co for lubrication, won't contaminate beer, cost of pumping much lower than with gas. Adaptable to stationary or portable bars—1/6 or 1/4 H. P. sizes. Attractively priced. Details on request.

Refrigerating Units

Design and precision tooling combine to make these units extraordinary from the standpoint of efficiency; and amply able to withstand the exacting requirements of long continued intermittent service. Buyers who seek good equipment will be interested in these units. Details on request.

CURTIS
PNEUMATIC MACHINERY CO.
1934 Kienlen Avenue, Saint Louis
5518-Y Hudson Terminal, New York City

the tavern and inn are somewhat similar in character to small hotels.

Restaurants which combine eating and drinking may be divided into two groups, namely, waiter service restaurants and lunch rooms. Waiter service restaurants in this case include regular waiter service dining rooms, restaurant grills, the so-called night clubs, and cafes. Lunch room grills, certain types of coffee shops, self-service restaurants, barbecues, "dining cars," wayside stands, and many others, all of which are similar in purpose, are included in lunch rooms.

Clubs which may combine eating and drinking facilities are given under two classes—Golf or Country, and certain social types.

Questions Asked By a Reader

SUBMITS A COOLING PROBLEM

To the Editor:

I would like to have a question answered through your Engineering Department. I have a customer for whom I installed two beer coils and a water coil. He claims that the water in the water coil is colder than the water that is around it. Can you explain this? Also, he says that the beer does not get cold enough even though the coils are immersed in ice and water. Each coil consists of 40 ft. of 3/8-in. block tin tubing and is covered completely with ice.

M. F. J. Springfield, Mo.

To the Reader:

It does not seem likely that your customer is correct in the statement that the water in the water coil is colder than the water which surrounds it. The reason for this is that if you have a mixture of ice and water in the cooling barrel which you constructed, surounding the water coil, it should be at a temperature of 32 deg. Fah. This is the melting point of ice and if the water in the coil is below 32 degrees as your customer states, then it would be frozen. Our suggestion is that you use some thermometers and determine just what these temperatures are.

Forty feet of 3/8-in. block tin coil should be ample for your beer cooling, as a matter of fact, many beer cooling boxes are installed with coils considerably under this length. Of course, it depends upon the temeperature of the beer to be cooled.

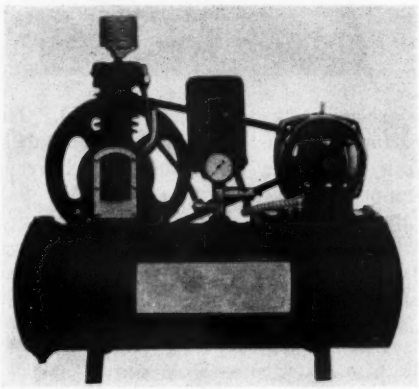
It is desirable, of course, to have the run between the tapped beer keg and the cooling coil as short as possible. In this way, there is a minimum possibility of the beer picking up heat in going through this run. Obviously, the more heat the beer picks up in running from the barrel to the cooling coil, the more heat must be taken out when it flows through the cooling coil.

We are sure that if you test the beer temperature, the water temperature and the ice and water mixture temperature, you will find that your installation is doing what you planned. However there may be some features in connection with it about which we have no knowledge, and which might have a bearing on the condition.

Products for the Beer and Bar Equipment Dealer

Beer Pump
Has Special Features

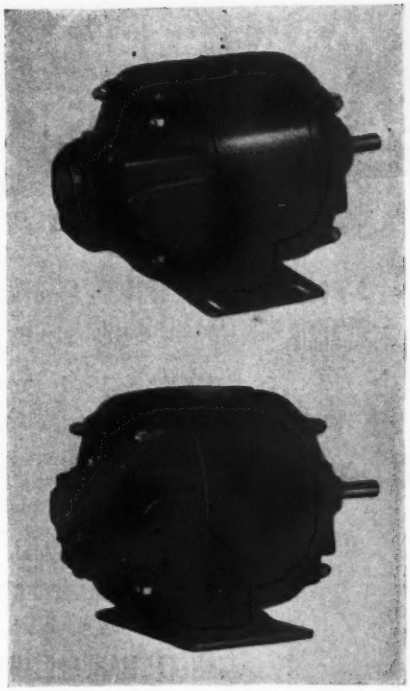
Developments in the beer and ale industry are demanding that more and more attention be given to the proper methods of serving these beverages. The beer pump shown in the accompanying illustration has been placed on the market with this idea in mind. It includes a device on the piston of the pump to prevent oil from



getting into the beer lines or the air storage tank which, of course, would permit it to mix with the air and get into the beer. This pump is designed so as to prevent the air from becoming foul with oil odors. All of the air is filtered through a unit for keeping the air clean and pure and the beer sanitary. All of the working parts are made to be lubricated automatically. Each pump is equipped with what is described as a non-stick automatic switch. Repulsion induction motors are used. Rugged construction is listed as a feature of the equipment. This line of beer pumps has been made to include systems capable of accommodating from four to twenty-four taps. The Uniflow Manufacturing Co., of Erie, Pa. is the maker.

For Recording
Beer Drawn

The meter considered here is arranged to register the number of glasses of beer drawn. Makers say that it will enable owner to save money by checking number of glasses drawn per barrel. Made by The Liquid Carbonic Corp., 3100 So. Kedzie Ave., Chicago. Ill,



Which motor for your automatic beer pumps?

For high torque, select the Type RSA, repulsion-start induction motor.

For moderate torque, select the Type KH resistance split-phase motor.

Both of these motors have features which will reduce your service costs and simplify installation:

1. **Built-in terminal box — no leads to splice or solder**
2. **Drip-proof end flanges keep dripping liquids out of motor — lower maintenance expense**
3. **Large bearing-oil capacity — oiling required only once a year**
4. **Rotors are cushioned to prevent objectionable noise from end-bumping caused by reciprocating loads**

For further information on these "carefree" motors, write to General Electric Co., Dept. 6B-201, Schenectady, N. Y.

NRA WE DO OUR PART

070-6

GENERAL ELECTRIC

MAKE REAL MONEY
Selling the
JANETTE BEER PUMP
The Standard for 25 Years

WE WILL ASSIST YOU with a TIME PAYMENT PLAN

Which enables you to sell on a small down payment with convenient monthly terms on the balance and

YOU GET YOUR MONEY NOW

If you have a reputable firm with a good financial standing, and cover the tavern trade, there may be an excellent chance for you to act as our distributor with an

EXCLUSIVE TERRITORY

Write or Wire to

JANETTE MANUFACTURING COMPANY
556-58 West Monroe Street
Chicago, Illinois

Ask any Old Timer about JANETTE *Beer Pumps*

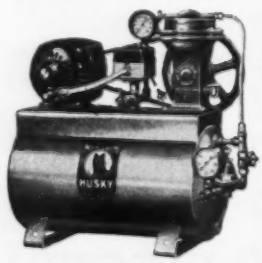
MADANITE

PURE ALUMINUM BEER COIL

No more rats eating runs, ice pick punctures, or crushing by ice. ONE THIRD CHEAPER than block tin and requires less ice. Coiled in 6 to 8 inch coils without extra charge, comes in 50 foot coils. 8c per foot. Net cash with order basis.

KARL PHILIPS INC.
53 East 25th Street **New York City**

PUMPS PURE AIR ONLY



No oil fumes to reach the beer. Bronze bearings throughout. Force feed lubrication. Quiet in operation. Completely assembled ready to install. Guaranteed for two years. A ready seller.

Write for distributors proposition.

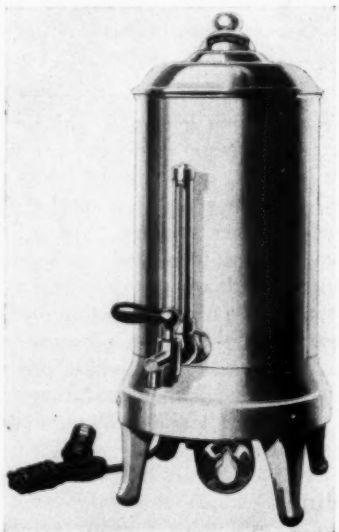
The Monarch Engineering Co., Dayton, Ohio

Cooling and Draught Equipment

The item pictured is a combined draught and cooling equipment, designed for serving under picnic or other similar conditions. The unit is self-contained, with no assembly problem. User merely taps barrel, inserts the unit, fills the bucket with cracked ice, and cooling action

of ice is exerted on a twenty-five foot-coil. The pump is oversize and quick-acting. Can be used with Peerless, New York or Golden Gate Bush, whichever may be used in tapping the barrel.

Now that the warmer weather is upon us, and the season when picnics, outdoor sports, and outings generally will be popular, an apparatus of this kind will play a big part in the day's pleasure. Made by The Central Brass Mfg. Co., Cleveland Ohio.



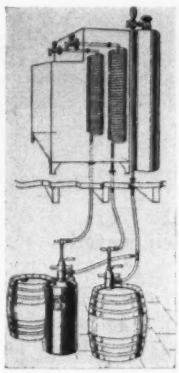
Boiling Water at the Bar

A great many of the concoctions called for at the bar call for boiling water. For these purposes, water at the

ordinary hot water tap temperature is not hot enough. The product pictured is a boiler for use on the bar. Nickel plated. Can also be had in stainless steel. Makers say it will boil a gallon of ordinary hot water from the tap in a few minutes and keep it just under the boiling point. Has safety switch. Plug in at any outlet. Made by Edison General Electric Appliance Co., 5600 W. Taylor St., Chicago.

Speedy Coil Cleaning

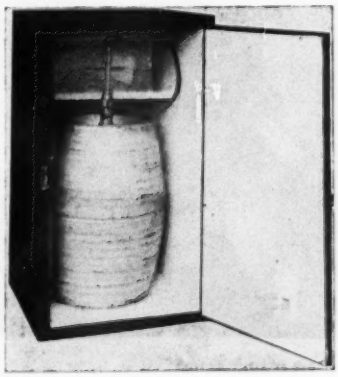
The coil cleaning apparatus shown consists of a flushing tank, adapted to tap and tap rod, and sufficient solvent for twenty-five cleanings. Cleans tap rod inside



and out, says maker; also that cleaning job can be accomplished in three minutes. Made by Taylor Manufacturing Co., Warren, O.

A Beer Keg Cooler

This cooler is made of all steel, with galvanized inner lining. Holds all standard half barrels, wood or steel. Adapted for use wherever beer is sold. Easily movable.



Finished in brown crackle enamel, insulated throughout with 1½ in. of cork board. Ice pan will hold 50 lb. Fitted with three hinges, lock and strike, nickel plated. Floor has steel skids to facilitate sliding barrels. Height 40 in., depth 24 in., width 23 in. Right or left door. Made by Steelcraft, Inc., Michigan City, Indiana.

Write for Circular of the
"GRAND" LINE
of Picnic Pumps and Taps

2530

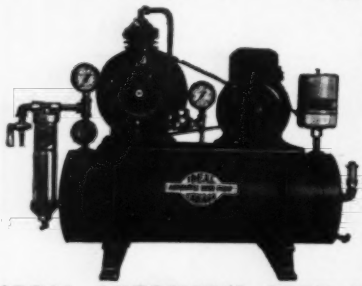
No. 2530—Complete as shown.
No. 2531—Less Tap.
No. 2532—With New York Tap.
Grand Picnic Pump and Cooler with Grand Bock Tap. 18 ft. of block tin coil furnishes ample cooling capacity for a steady flow of cool beer at all times. Ideal for picnics, social gatherings, lodge meetings, cottages, etc. Ice capacity 25 to 30 lbs.

No. 2432—New Style Grand Tap.
For use with wood and steel barrels, featuring a large wing nut for tightening so the tap can be securely fastened to the barrel by hand without the use of tools.

No. 2433—New Style Grand Bock Tap.
For use with picnic pumps, featuring a large wing nut for tightening so the tap can be securely fastened to the barrel by hand without the use of tools.

Manufactured by
Grand Haven Brass Foundry
GRAND HAVEN, MICHIGAN
U. S. A.

IDEAL *Automatic Electric* **BEER PUMP**
WITH AIR FILTER



A QUIET and complete automatic unit for supplying air pressure for the dispensing of draught beer. The cost of operating this unit is less than one cent a barrel. Especially priced at $67.00, complete. Without filter $62.50.

Write for exclusive dealer proposition

IDEAL AUTOMATIC BEER PUMP COMPANY
801 WEST WASHINGTON BOULEVARD, CHICAGO
Telephone Haymarket 5680

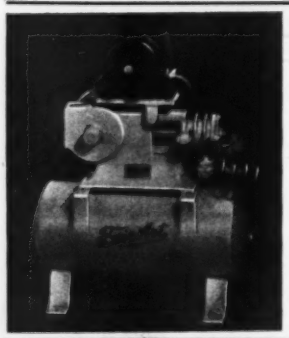
Beer Dispensing Equipment

Bar Faucets, Tapping Rods, Beer Dispensing Equipment and Fittings; Coils, Air and Gas Regulators and pumps.

for

26 Years!

ILLINOIS BRASS MFG. CO.
224 NORTH ADA STREET CHICAGO, ILL.



.No Oil
.No Oil Fumes
.Just Fresh Beer

The FAIR-ART is constructed so that oil or oil fumes can not get even remotely close to the beer. Air compressor cylinder and crank case housing are separated, eliminating need for lubrication.

•

Profitable territories are still available. Write at once.

The **FAIR-ART**

Shipped completely assembled. Two sizes: No. B00—10 tap capacity. No. T-800—30 tap capacity.

FAIRBANKS ENGINEERING CO.
WORCESTER, MASSACHUSETTS

Positively Pumps No Oil!

Dayton's "WHITE CAP"
Automatic, Oil-less
BEER PUMP

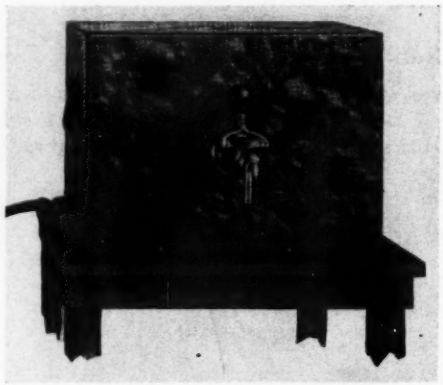
EXCLUSIVELY FOR BEER!

Ideal for dispensing draught beer in large volume—because it assures a good supply of clean, dry compressed air at all times. No pistons or rings—prevents pumping of any oil whatsoever into air line. ¼ HP repulsion-induction motor—10 gal. tank—cuts out at 90 lbs. pressure and in at 70 lbs.—quiet operation—V-belt driven. Size 24"x28"x 12". Weight—80 lbs. net. Ask about Model Y-100—Also Air Compressors from 1 to 50 cfm.

The DAYTON AIR COMPRESSOR CO.
"49 Years of Specializing"
425 Valley St., Dayton, Ohio

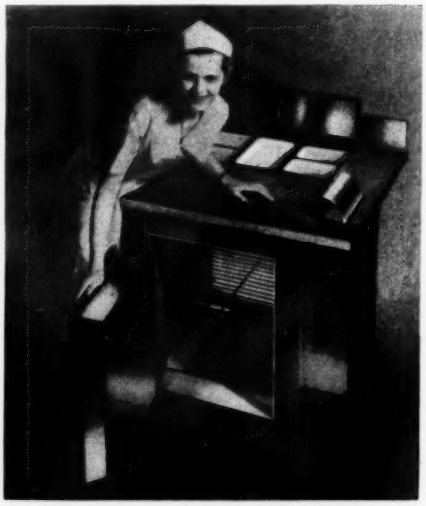
A Small Beer Dispenser

The dispenser shown is attractively finished inside and out, and heavily insulated. In the dispenser is a rack for glasses. The cooling unit consists of 22 ft. of block tinned coil. Is easily portable. Crackle finish. One faucet. Made by Morrison Bros. Co., Dubuque, Ia.



Mechanically Refrigerated Salad Unit

The unit shown is made in 2 ft. 6 in. and 4 ft. 6 in. length, 28 in. wide and 35 in. high. Is supplied with a direct expansion, fine type coil and an individual coil connection in series with the fine coil is used for the lower refrigerator compartment, maintaining a pre-determined temperature. Coils operate with thermostatic valve. Three in. insulation, with inside lining of seamless welded white porcelain. Has extra heavy stainless steel



front and door. Manufacturer says feature of the mechanically refrigerated door is that it is equipped with circuit breakers to prevent heat from entering from outside surface. Four small and one large salad pans standard for small unit, two large and eight small pans standard for larger unit. Salad trays may be covered with collapsible top. Manufacturer: The Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago, Ill.

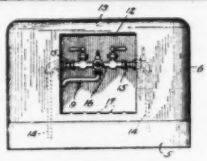
New Ideas From Patent Office

Plumbing Department

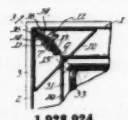
1,929,895. Soldering Flux. Frank D. McBride, Philadelphia, Pa., assignor to Berry Solder Co., Inc., New York, N. Y., a corporation of New York. A soldering flux including hexamethylene-tetramine in amount ranging from 1 to 25% by weight and a monohydric alcohol ester of abietic acid.

1,931,212. Sink Construction. Charles H. Topp, Huntington, W. Va.

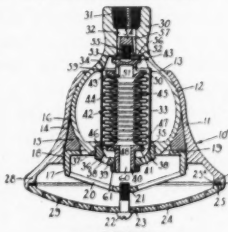
1,928,924. Shower Bath Cabinet. John O. Barce, Chicago, Ill.



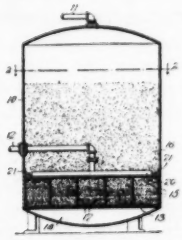
1,931,212
SINK CONSTRUCTION



1,928,924
SHOWER BATH CABINET



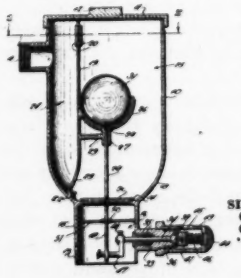
1,930,227
SHOWER HEAD



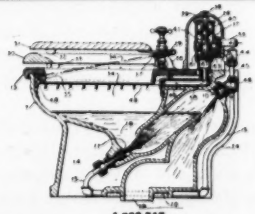
18,970
ZEOLITE WATER SOFTENER

1,930,227. Shower Head. John M. Donahue, Waterville, Conn., assignor to Scovill Manufacturing Company, Waterville, Conn.

18,970. Zeolite Water Softener. Robert O. Friend, Chicago, Ill.



1,931,608
FLUSH VALVE



1,928,717
SIPHON JET FLUSHING NOZZLE, WATER CLOSET, FLUSHING VALVE, AND BIDET COMBINATION

1,931,608. Flush Valve. Charles W. Hess, Middletown, N. Y.

1,928,717. Siphon Jet Flushing Nozzle, Water Closet, Flushing Valve, and Bidet Combination. Cesare C. Campus, Santa Monica, Calif.

Hartford, Conn.—The plumbing and heating firm of Davis & Bartone at 1107 Albany Avenue, has been dissolved. P. Bartone retires from the firm, and I. Davis will continue the business at the same address.

THE "MODERN" RANGE BOILER

30, 40 and 50 Gallons
200, 250 and 300 lb. Test

Pat. No. 1853949

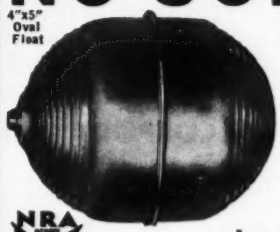
In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.
Established 1870

NO-SOL COPPER FLOATS

4"x5" Oval Float



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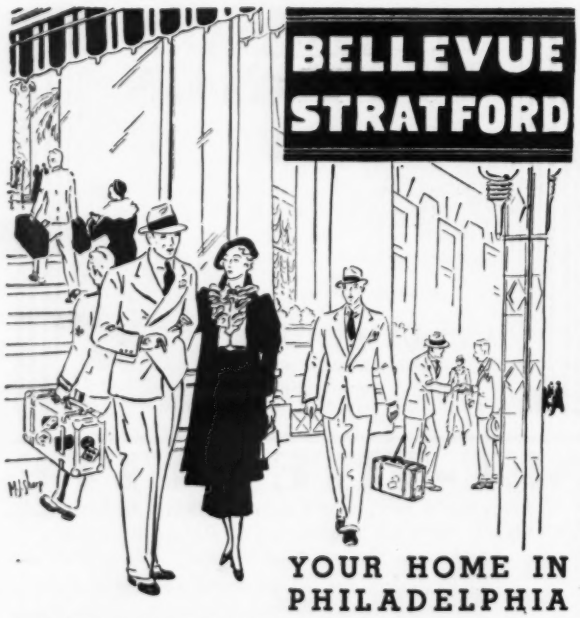

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A hotel that lives up to its fine traditions . . . an unhurried hospitality reminiscent of an Older Philadelphia, and its charm . . . a cuisine that bespeaks the wizardry of world-famed chefs . . . plus every modern, thoughtful regard for your comfort, convenience and pleasure . . . all at most reasonable rates.

Claude H. Bennett, *General Manager*

Appliance Sales—

(Continued from Page 41)

George Jaquet by name, who announced himself as the emissary of the heads of several large utility companies in the state. He brought word from these presidents and vice presidents that they would welcome talking over as man to man with our association's officers the issues raised in Mr. Berger's letter. It was clearly implied this would be only for an exchange of views and no commitments would be called for. Our board of directors voted to accept this invitation. In April, our directors from various sections of the state met at Hartford with the following executives, subsequently these men became the personnel who represent gas and electric companies on our state Plumber-Utility Joint Committee referred to later in this paper:

E. E. Eysenbach, President, Hartford Gas Co.

Samuel Ferguson, President, The Hartford Electric Light Co.

R. H. Knowlton, Vice President, The Connecticut Light & Power Co.

H. R. Sterrett, Vice President, New Haven Gas Light Co.

R. D. Cutler, Vice President, The Hartford Electric Light Co.

In April also, the directors of our association appointed the following officers and directors to serve as the master plumber members of the Joint Committee:

Joseph E. Berger, Bridgeport (then president of the association), C. A. Hjerpe, New Britain, (then vice president of the association), George E. Purdue, New Haven and I. B. Skau, Hartford. Both the master plumber and the utility company personnel have continued in office since the committee began to function. Mr. Hjerpe, as committee chairman, devoted himself without stint to crystallizing the committee's plan into a statewide movement that is expressed in better company policies and more plumber willingness to take advantage of them. In a short time the two parties found a common basis for clearing up these merchandising situations cooperatively instead of each proceeding towards attainment of its objectives through other and opposing tactics. Dispassionate analysis of the complaints raised disclosed that:

1. The practices complained of were local in nature;
2. There was no measuring stick to determine in specific instances what was fair and what was unfair practice;
3. Both master plumbers and gas and electric companies had much to gain from promoting in common the appliance business.

So we formed a permanent state joint committee of four Master Plumbers and four Utility Company representatives, charged with the duty of promoting harmonious and mutually profitable relationships between master plumbers and the gas and electric companies in their communities. The four Master Plumber members were chosen by the state Master Plumbers Association; the four Utility Company members by the two state associations of gas and electric companies. C. A. Hjerpe of New Britain, Mr. Berger's successor as president of the state association, is chairman of the Joint Committee.

DRAFT MERCHANDISING CODE

A code of fair merchandising procedure in marketing appliances was drafted and adopted by the Joint Committee. Its adoption by all gas and electric companies and by all master plumbers is one of the chief aims of the Joint Committee. Of the fifteen articles in the code, the first eight are literally the national code itself promulgated by the N.A.M.P. and the American Gas Association in June, 1931.

The seven articles that follow are designed to meet specific conditions in the state and to particularize the general idea. These principles were approved by vote of the membership of the three associations concerned, at their respective annual conventions.

All gas and electric companies in the state subscribe to the Connecticut Merchandising Principles, as the code is known. Compliance necessitated adjustments in selling policies and methods to greater or less degree by the several companies; all differ from the others in their merchandising practices. This fair practice code has proved to be highly valuable more as a yardstick of what constitutes good merchandising than as a policing instrument.

A third measure was instituted by the state Joint Commitee, namely, the formation of local joint committees as the simple agency through which complaints could be disposed of locally and to promote the securing of more apliance business through plumber and utility outlets. The wisdom of establishing these local committees has justified itself. All have proved definitely useful and several indispensable. These committees follow the composition of the state committee and consist as a rule of four master plumber and heating contractor representatives, and the general manager and commercial manager of the utility company. Where difficulties are not disposed of locally the state Joint Committee serves as a court of last resort.

ONE REASON WHY PLAN WORKS

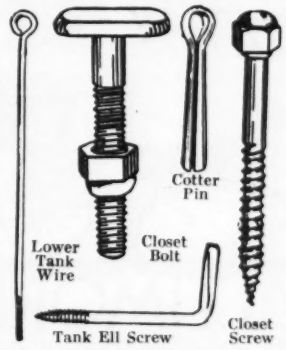
It usually happens when dealer and utility representatives meet to iron out their differences, that they stop and consider the task well done once the issues have been aired and some kind of a corrective platform has been agreed to. Not so with Connecticut Plumber-Utility Joint Committee. Realizing that the code it had drawn up and the machinery it had created would eventually come to naught because no one on the committee could take sufficient time off from his regular duties to follow through, the Committee engaged Mr. Jaquet, previously mentioned, to devote his entire time to promoting its program.

Mr. Jaquet brought to the job extensive experience in fostering cooperative trade groups, in the merchandising of appliances, and in stimulating sales through promotional activities. Among his chief activities are these: encourage general observance of the Connecticut Merchandising Principles; assist in forming the local joint committees; help to adjudicate alleged complaints not readily disposed; urge common effort in increasing the markets; act as an impartial chairman; etc. Continual contact with master plumbers and utility men is a major part of his activities.

Money must be provided if there is to be available a qualified man and the necessary office and traveling facilities. Ordinarily these expenditures would be borne by both the master plumber and utility groups; it happens under present circumstances, however, that the two utility associations have voluntarily assumed this obligation. Nevertheless, Mr. Jaquet is directed to serve impartially both the master plumbers and the utility companies, and to look after the interest of each without favor, exactly as though support came from both sides in equal measure. Mr. Jaquet has won our respect because of his constant endeavor to be fair both to us and to the utility companies. He is supported wholeheartedly and consistently in this attitude by the gas and electric company members of the Joint Committee and utility company executives generally.

Coincident with this state-wide movement marked benefits now flow to cooperating master plumbers and utility companies. Almost every gas and electric company in the state has raised to even higher standards its merchandising practices in the light of the Connecticut Merchandising Principles as they relate to master plumbers. Several bad situa-

LITTLE HELPS TO B I G PROFITS



By having Hindley's Plumbers' Specialties always at hand, time otherwise lost on the job is saved . . . a fact you'll appreciate when figuring your profit.

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PLUMBER'S *Rough* BRASS *Goods*

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For chrome, brass and nickel plated pipe

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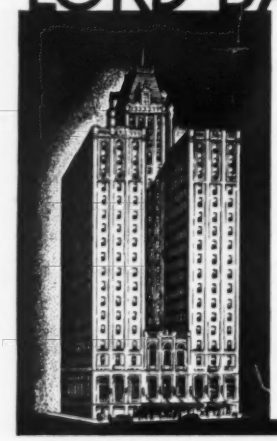

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1050 ROOMS ALL WITH BATH
RADIO IN EVERY ROOM

In Columbus it's
The NEIL HOUSE
650 ROOMS. ALL WITH BATH

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The MAYFLOWER
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RADIO IN EVERY ROOM

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AN EXCLUSIVE WINTER RESORT HOTEL
OPERATING EUROPEAN PLAN

tions that had become chronic through long standing have been cleared up. They were open sores which darkened constructive progress achieved elsewhere. Utility men and master plumbers involved in these situations have given freely of their time and exercised patience. Now for the most part these sores are eliminated and the tone of relationships over the state has been raised.

SOME OF THE BENEFITS

Some companies went beyond, going to considerable lengths to meet the views of their plumbers; and in addition now offer more attractive commissions and flat installation rates paid to plumbers. This has had a beneficial influence. Plumbers have come in for a large amount of newspaper advertising they did not enjoy before. Virtually every company now features the plumber-dealer in its advertisements and consumer mailing prices.

Utility executives including members of this Committee, commercial department heads, and plumber representatives have spent much time in attending state, system and local conferences to adjudicate controversial matters and reach agreement on cooperative selling plans. Although time consuming, these meetings were indispensable and have laid the foundation for the more obvious goodwill that now exists. Education in knowledge of how the other's business functions has been reciprocal.

I have been asked, "To what do you attribute such progress as you have made?" My reply is this. First, the heads of the utility companies with whom we deal are square; like ourselves they are business men and they mean business. Bygones are bygones; once disposed of we devoted our attention to creating more business. Second, although they are the highest executives in their companies, they regard the subject of good trade relations with master plumbers as being of great enough importance for it to receive their first hand attention. You have to go to the men at the top who control basic policies and see things in the large if you are going to root out commercial practices that are not sound. Third, we have the right man on the job as the impartial liaison man between the master plumbers and the utility companies. He knows merchandising; he knows how to bring conflicting groups together; he is fair; and he has the facilities to do a job.

I don't want to leave the impression that this movement has fully realized its purpose or that we have achieved perfection. There is still great room for improvement. Although in point of size area, Connecticut is a small state, the gas and electric companies within its boundaries are mostly under separate and independent ownership. Their views on load building, hence, are not all the same. Contrasted with the more advanced plumber co-operation policies described previously herein, a few companies still offer insufficient profit inducements to attract plumbers. Or, their plan is fair but they fail to back it up with earnest and sustained assistance. Naturally it would be a little short of phenomenal were the fifteen separate companies (each of which operates according to its own lights) to make over their commercial plans all within the short space of two years. Worthwhile changes require time. And, many master plumbers, too, need some making over.

Because he has his "foot in the door" and his customers invite his judgment on equipment for the home, the master plumber has exceptional opportunities to sell water heaters, ranges and refrigerators of quality. The gas and electric companies can aid him very definitely in selling more of them and in closing sales more readily than when he works alone. It is our idea that enthusiastic co-operation between the master plumber and the utility company opens opportunities to sell which otherwise would not be uncovered as soon, and in some cases not turned up at all.

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One inch $4.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

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Situations Wanted

COMBINATION MAN, PLUMBER AND steamfitter, wishes steady position. Ohio or Pennsylvania. Married man, fifteen years' experience. Prefer open shop conditions, no labor trouble. Would exchange correspondence. Best of references. Address Key 956, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

FOREMAN — ESTIMATOR — ENGIneer, plumbing-heating technical graduate; fifteen years' executive experience; go anywhere; consider any legitimate proposition. Address Key 958, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

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MANUFACTURERS' REPRESENTAtive. Covered Western Pennsylvania over ten years. Familiar Plumbing, Heating and Pump lines. Open for proposition covering one or more lines. Pittsburgh as headquarters. Address Key 952, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

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MANUFACTURERS' AGENTS: WE have ready to market, a newly patented MOLLY Expansion Bolt, which possesses Universal features, never before utilized. It makes an instant appeal to the plumbing jobber. If you are well established in the trade, write us fully. The Croessant Company, 24 North 6th St., Reading, Pa.

REPRESENTATIVES WANTED: MEN contacting architects and engineers to handle a line of drainage specialties. Give full particulars regarding qualifications and lines handled. Address Key 946, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

Lines Wanted

LINES WANTED — COVERING JOBbers in Westchester, Dutchess, Putnam and Ulster Counties, New York State. Want additional lines. Address Post Office Box 373, Larchmont, New York.

REPRESENTATIVE — HAVE GOOD contacts with plumbing and heating wholesalers in greater New York area. Can secure business for you. Fifteen years' experience. Address Key 961, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

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MANUFACTURERS' REPRESENTAtives wanted by established manufacturer of high quality Concealed Copper Convection Heaters. Liberal agent's discount. Address Key 955, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

SALESMEN WITH FOLLOWING, calling on rated plumbing contractor and hardware stores, line pipe nipples, direct factory shipment, priced low, profitable side line, state territory covered. Address Key 957, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

For Sale

FOR SALE—PLUMBING AND BEER pump shop with four rooms in Central Chicago. Long established business—clean stock. Must sell on account of death in family. Address Key 962, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Ill.

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FOR SALE: TWO 3000-FOOT GAS burning McBeth Boilers. Nearly as good as new. Reason for selling, changed to burning coal. Write Elk County Home, St. Marys, Pennsylvania.

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PLUMBERS' BIN LABELS. SEND FOR samples and free booklet: How to Label Plumbers' Stock Bins. HADDON BIN LABEL CO., Haddon Heights, N. J.

WE MAKE A SPECIALTY OF JOB Tickets, Contract-Estimate Sheets, Letter Heads, Bill Heads, etc., for Plumbers. Reasonable prices; samples promptly mailed. Louis Fink & Sons, Laurel Springs, New Jersey. Established 1896.

Have you a personnel problem — Are you seeking a new connection?

No matter what your personnel problem, DOMESTIC ENGINEERING's classified advertising pages present the best solution because they put you in touch with the best men in the industry. Men who are ambitious, who are experienced in the plumbing and heating field and who are always on the alert for an opportunity to make a good connection.

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And if you're seeking a new connection, if you are looking for a permanent connection with a good house, DOMESTIC ENGINEERING classified advertising will tell your story to your best prospects.

If you have anything to sell, if you're looking for miscellaneous "buys" in plumbing necessities, you'll find the classified page the best market place.

Tell us your problem — let DOMESTIC ENGINEERING classified page solve it.

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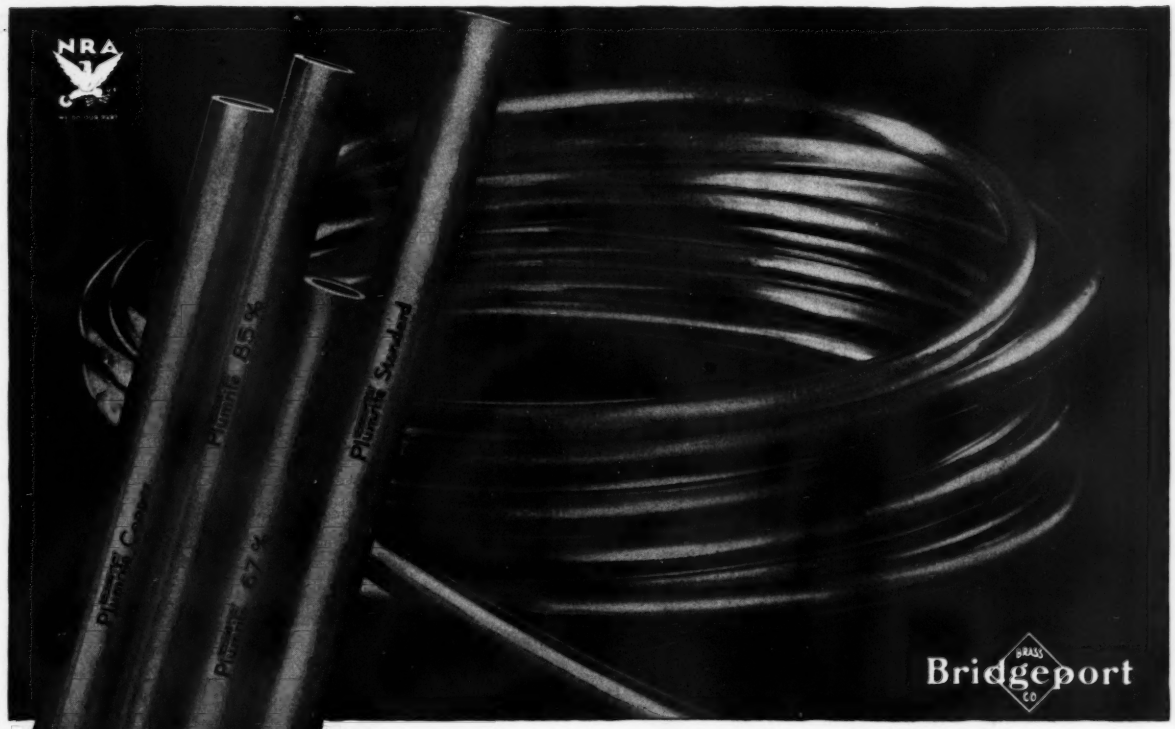

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Copper Water Tubing

Both are easy to work . . . easy to install . . . assuring economical installation costs, and a rust-free, full-flowing water supply during the entire remaining life of the building.

Plumrite Brass Pipe has been the standard for over forty years. It is made in 3 mixtures and Copper to meet any corrosive condition. Bridgeport Copper Water Tubing (99.96% pure copper) comes flexible in coils and also in hard straight lengths.

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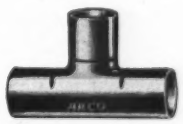

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BOSTON • CINCINNATI • DAYTON • HOUSTON • NEW YORK CITY • PROVIDENCE
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you've ROBBED ME for the LAST TIME!"

Looks OK outside what's inside of

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This full page advertisement is doing a good job *for* you ...because it's designed to bring a lot of good jobs *to* you. "Talk up" a Monel Metal Hot Water Tank (range boiler) every time you see one of your customers, and every time you go out on a job. We're breaking the ice for you with Monel Metal tank advertising...The ad on this page is running right now...it appears in The Saturday Evening Post, Collier's Weekly, The Ladies' Home Journal and House & Garden. Circulation—7,623,425. Reaches all the more prosperous homes in your territory...your best prospects for Monel Metal Hot Water Tanks (range boilers).

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But you are *not* forced to put in its place another tank equally vulnerable to rust.

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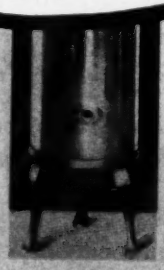
This Nickel alloy resists corrosion from every water-borne source. It produces no metal-caused dregs to contaminate your hot water for cooking, defile your bath, or stain your treasured linens.

Instead, you have the comfortable knowledge that the *inside* of your Monel Metal tank . . . *like its outside* . . . is as gleamingly clean as polished silver.

Replace your tank for the last time. Your plumber is ready to give you an estimate of the price of a Monel Metal tank



...Macy's ...rd House, ...ture at the ...u've probably ...al displays at your ...ent store. Mail the ...for complete information.

INTERNATIONAL NICKEL COMPANY, INC.
73 Wall Street, New York, N. Y.

Monel Metal

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

NRA

THE INTERNATIONAL NICKEL COMPANY, Inc.
73 Wall Street, New York, N. Y.

Please send information on:
☐ Monel Metal Hot Water Tanks and Automatic Gas Storage Heaters.
☐ Monel Metal Sinks, Tables, Ranges and other Household Equipment.

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